



CANADA *as a* BUILDER *of* MOTOR CARS

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Large

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DAWSON

RESOLUTION

PRINCE RUPERT

CHURCHILL

PORT NELSON

EDMONTON

PRINCE ALBERT

SASKATOON

VICTORIA

KAMLOOPS

REVELSTOKE

BANFF

MEDICINE HAT

MOOSE JAW
MAPLE CREEK

VANCOUVER
ZONE OFFICE

CALGARY
ZONE OFFICE

REGINA
FACTORY, ZONE OFFICE

WINNIPEG
ZONE OFFICE

CANADA

General Motors operations cover the length and breadth of the Dominion. Four Factories, eight Zone Offices, several Parts Depots, dot Canada. Besides, there are over a thousand General Motors dealers and service stations — a retail outlet in nearly every city, town and village



WORK FOR MANY HANDS



Canada as a Builder of Motor Cars

NO other manufactured article affects so greatly the daily life of as many Canadians as does the automobile. Not only has the motor vehicle provided safe and easy transportation, but it has also brought into being a whole group of new industries and trades. The tendency is to think of the motor car industry in Canada as a dozen or so companies who employ a few thousand men. But into these factories are pouring day after day trainloads of parts and raw materials from hundreds of sources in every part of the country. And these suppliers in their turn buy from the forest, the mine, or the mill. So men and women in primary industries all over the country are working to provide the material that goes into the finished car. The building of an automobile represents a means of livelihood not only to workers in the motor factory but also to those in primary industries.

Nor do the employment benefits of the motor car stop here. Sister industries have sprung up at its bidding. To provide it with fuel and lubrication a score of oil companies have come into being, thousands of service stations have been erected at the country's crossroads. The motor car has been responsible for more highway

building in the last thirty years than was accomplished in centuries previously. All the employees in the oil industry, all the highway workers, owe their livelihood to the automobile. No less dependent on the automobile are the thousands of Canadians who profit from the tourist traffic's \$250,000,000 payment to the country each year.

One could continue almost indefinitely down the list of those dependent on the car. Take, for instance, two such widely separate industries as the manufacturers of traffic lights, and the publishers of road maps. Each has been brought into being by the motor car, and each depends on the continuous growth of the automobile industry for its survival.

In this book an attempt is made to trace the ramifications of a single representative of the automobile industry in Canada. General Motors of Canada, Limited, provides an ideal example, not only because it is the most important, but because it has always been Canadian, from its foundations laid 65 years ago to its products of today. No more fascinating story of business exists, indeed, than that which begins overleaf.

An Industry Woven into the Growth of a Nation

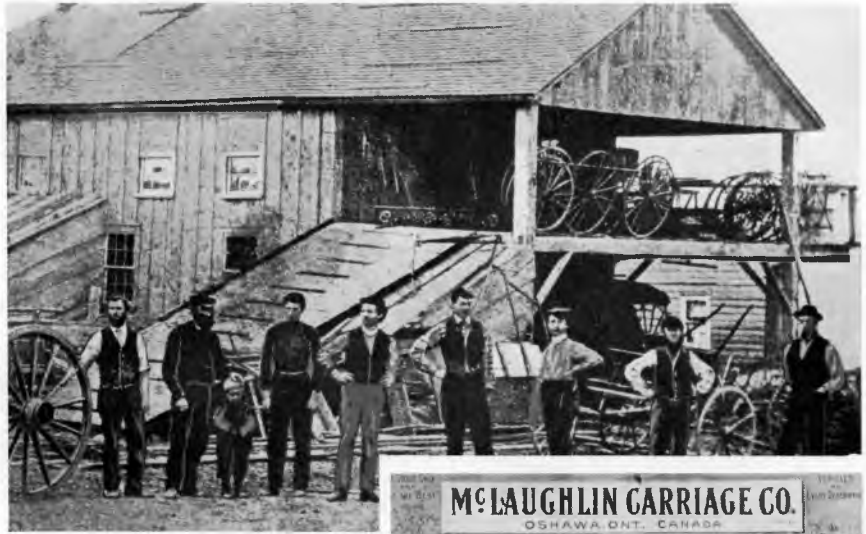
CANADA was young when the foundations were laid for the industrial structure of General Motors of Canada, Limited. Twin ribbons of railway steel stretched westward only as far as the Great Lakes. The prairie schooner and the ox-cart were still the only means of transportation on Canada's fertile plains. It was 1867, the year of Confederation. Recognizing the fact that transportation was one of the vital needs of the new-born Dominion, Robert McLaughlin, sturdy Britisher, launched a carriage-building venture on a small scale at the crossroads village of Enniskillen, Ontario.

Within a decade, the demands upon production forced the abandonment of the small Enniskillen forge, and in the nearby town of Oshawa, the McLaughlin carriage business, operating consistently on a basis of "One grade only and that the best," soon out-distanced any other in its line.

It was R. S. McLaughlin, son of Robert McLaughlin—now president of General Motors of Canada, Limited—who persuaded his father, back in 1907, that the days of the horse-drawn vehicle were numbered,



The late Robert McLaughlin, who founded the McLaughlin Carriage Company in 1867.



The McLaughlin carriage shop at Enniskillen, Ontario, fore-runner of General Motors of Canada, Limited.



An early model from the plant of the McLaughlin Motor Car Company—the Model "26" Limousine.



The coming of the automobile in Canada. This picture is reproduced from a calendar of the McLaughlin Carriage Company the year the first automobile was manufactured at Oshawa.



General Motors of Canada, Limited, came into being when McLaughlin Motor Car Company united with General Motors in 1918. The president, R. S. McLaughlin, is shown here with H. A. Brown, vice-president and general manager (at the wheel of the 1932 McLaughlin-Buick Eight). These two administer an organization by no means confined to the works at Oshawa, but which also includes factories and offices in other cities of Canada, the whole being a direct outgrowth of the original McLaughlin carriage shop at Enniskillen.

and that the company's future lay in the direction of motor transportation. A connection was formed with the Buick Motor Company, by which the Canadians built Buick-engined cars under the name of the McLaughlin Motor Car Company. The manufacture of Chevrolet cars was added to the factory activity in 1915, and at that time the McLaughlin carriage concern ceased to exist, after having built 270,000 buggies and sleighs.

The original line of cars produced has been amplified in recent years by several additions—a car for every purse and purpose—so that today the company meets every requirement in the automotive field. As will be noticeable in the pages that follow, the present activities of this automotive company of Canada are directed toward supplying motor cars made in the Dominion by Canadian workmen and of Canadian and British materials.



A General Motors Car in the Making

MOTOR cars are built from the ground up by General Motors of Canada, Limited, but not without the assistance of many contributing industries. Production of an automobile at the Oshawa plant means much more than the employment of workmen in G.M. plants. It means that lumber workers have been busy in the British Columbia forests, miners have delved in Algoma and Nipissing, railroad workers have handled material in transit, and skilled hands have been engaged in primary and intermediate operations of all kinds between the raw material stage and the car-building operations.

There are, in fact, hundreds of companies supplying parts and equipment to General Motors of Canada, Limited. This company consumes, in average times, millions of dollars worth of steel annually; a million dollars worth of upholstery and cloth; millions of board feet of lumber; nearly 25 per cent. of all the rubber produced in

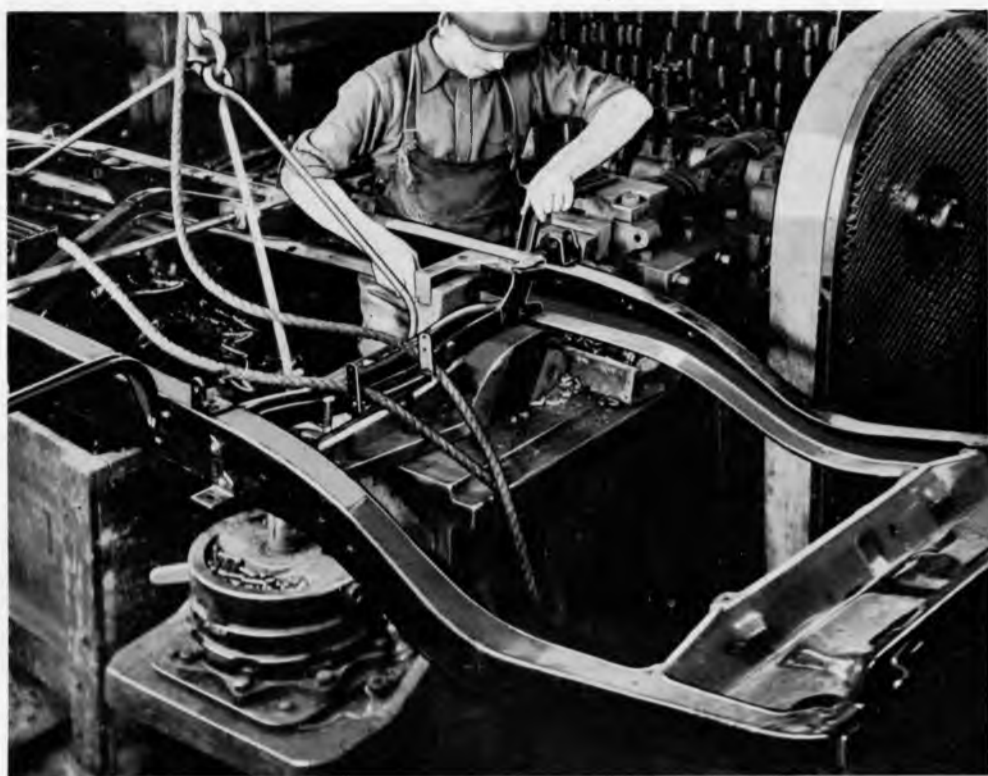
Canadian factories; and correspondingly large quantities of paint, lead, tin or nickel and other basic materials.

Examining the Chevrolet automobile, for example, it is found that all parts of the Dominion of Canada contribute. Chassis springs are purchased from firms who make them at Gananoque, Ontario, and Oshawa. Front axles are manufactured by the General Motors plant at Walkerville, forgings being supplied by a Canadian company in the same city. Third member assemblies, including differential, are made by McKinnon Industries at St. Catharines. The body is completely built in Oshawa. Engines are built at Walkerville and radiators at Oshawa, material in both cases being supplied by Canadian companies. Factories in many cities supply castings, bumpers, glass, wiring, paint, trim, hardware and wheels.

To unfold this interesting industrial panorama, photographs and descriptive material have been collected, showing some of the principal factories contributing.



"The run is on!" This mighty cradle, with its freight of molten steel from open hearth furnaces, pours the ingots that are later to be employed in the manufacture of strong and enduring mechanical parts required for the products of so many modern industries. This photograph, taken in the mills of the Steel Company of Canada, Limited, at Hamilton, Ontario, dramatizes in an arresting way the magnitude of operations in basic industries which are dependent in no small degree upon the Canadian automobile industry for an outlet. Making of automobiles by General Motors of Canada, Limited, turns wheels in many great Canadian plants similar to the one shown here.



Interior of General Motors plant at Oshawa showing a special rivetting machine in operation, rivetting body brackets and running board supports to the frame before the frame receives the front axle and rear axle assemblies.



Oil tempering of spring leaves just after leaving the heat treating ovens in the plant of the Ontario Steel Products at their Oshawa plant. On the completion of their tempering bath they are assembled into spring units for mounting to the frame on the final assembly line.



Assembly of shock absorber units in the St. Catharines plant of the McKinnon Industries Limited follow the same procedure of progressive production used in the production of automobiles. The shock absorber spring is being compressed to permit installation of the piston.



Completion of the front axle assembly is shown here with the various stages of brake adjustment being made. This assembly includes: attachment of brakes, steering tie rod, speedometer cable and king pin adjustment. This completed unit is fitted to the frame through the springs.

The Beginnings of the Chassis

STEEL in moulded form is the foundation for the rugged and powerful frames about which are built the fleet and graceful models of all General Motors cars and trucks. As the beginning of an automobile is the chassis or undercarriage, it must have side members and cross members. Rivetted and bolted together as a unit it is placed on the frame line and front and rear axles are added with their necessary parts. Brakes, steering rods and speedometer connection are adjusted and the frame as a finished unit is lifted from the frame line to the final assembly line for the addition of the numerous other necessary items that make it a complete automobile.



Plant of the Ontario Steel Products at Oshawa where steel springs for General Motors cars are completely manufactured.



The plant of the Thompson Products Limited, St. Catharines, Ontario, where the tie-rods and piston pins are manufactured.



The plant of the Hayes Wheels and Forgings Limited, Merriton, Ontario. Supplying propeller shafts, hubs and drums for General Motors cars.

SIMULTANEOUSLY with the assembly of the frame, the work of axle assembly is proceeding in another part of the plant. From the rear axle sub-assembly line the rear axle housings are delivered by travelling chain to the appropriate place in the main assembly line, there to be mounted as the chassis construction proceeds.

Back of the sub-assembly of rear axles, there are just as many primary operations as in the case of the frame assembly. Raw material comes from iron and steel industries. Bolts and nuts have to be made by separate subsidiaries. Still other factories turn out the finished castings.

In the assembly of rear axle machined parts there is a most important series of inspections that must be maintained to limits, microscopic in their actual measurements.

The process of making the axle gears is one that requires most precise and costly machinery and workmanship of a high order. The plant of the McKinnon Industries unit of General Motors at St. Catharines, Ontario, is well equipped for making these important parts of the axle assembly, as well as for producing many other items of equipment.

Photographs on this page show some of the primary operations taking place in Canadian factories distant from the main assembly plant before the component parts of the rear axle assembly are brought together.



Ore storage and blast furnaces, Hamilton works, Steel Company of Canada, Limited.

Forging operation at St. Catharines, Ontario, plant of McKinnon Industries, showing work on one of the rear axle gears.



The illustration at the right shows the rear axle sub-assembly line in the General Motors of Canada, Limited plant, Oshawa, showing third member being assembled to axle housing, fitting of brake shoes and drums.



Pouring iron for castings in rear axle assembly, St. Catharines, Ont.



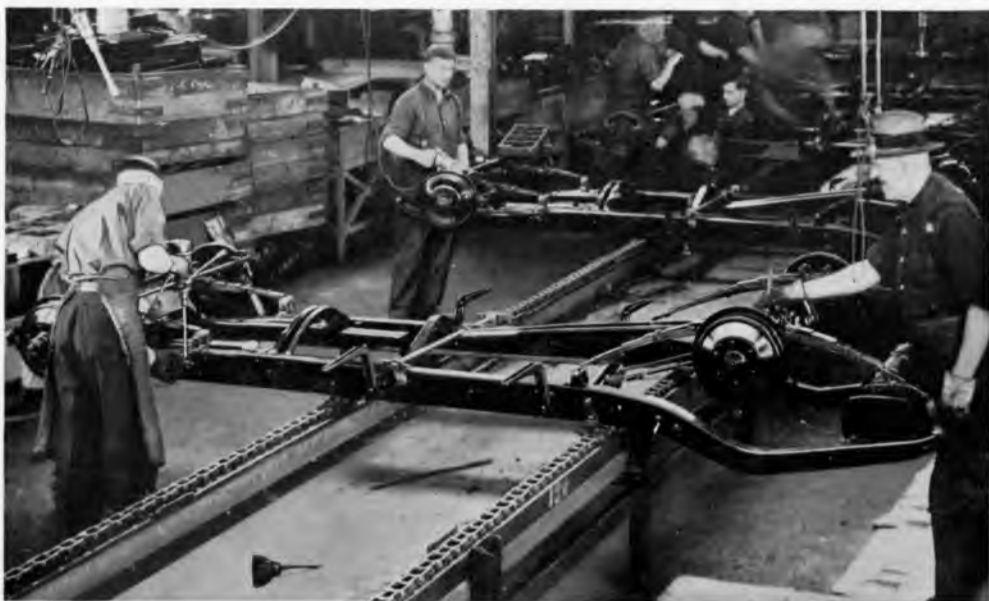
Cutting teeth on crown gear. A scene at the St. Catharines plant of McKinnon Industries.



Bolt and nut department of Steel Company of Canada, Limited, at Swansea works, Toronto.



Machining steel castings for rear axle assembly. Plant of McKinnon Industries, St. Catharines, Ont.



The frame is now ready to leave the frame line for transfer to the final assembly line. Emergency brake rods, gasoline tank, motor side pans and stabilizer bracket have just been added.



Furnaces and steel hammers are shown here forging front axles from steel bars in the plant of the Dominion Forge and Stamping Company in Walkerville, Ontario.



In this department of General Motors plant in Oshawa, a battery of giant stamping machines turns out finely curved metal parts from flat sheet steel. This machine stamps motor splash side pans and in one operation produces both right and left pans from a single sheet of steel.



Completing brake assemblies in Walkerville plant of General Motors of Canada, before installation on the frame.



Loading a broaching machine in the plant of the Stewart-Warner Co., in Belleville, Ontario.

ON its uninterrupted journey toward completion the chassis continues to draw from all corners of the country the finest of materials and workmanship, represented in the parts to be assembled on its rugged frame. Front axles are forged complete from Canadian steel in the forge plant of the Dominion Forge and Stamping Company in Walkerville. The small Alemite grease fittings, are produced in great quantities by the Stewart-Warner Co., Belleville, Ontario, shipped to the production plants of General Motors in Canada, and carefully installed on the frame and axle assemblies. In Walkerville the Eclipse Manufacturing Company turns out brake parts.



Aerial view of the plants of the McKinnon Industries Limited, St. Catharines, Ont.



Forge plant building in Walkerville of the Dominion Forge and Stamping Company.



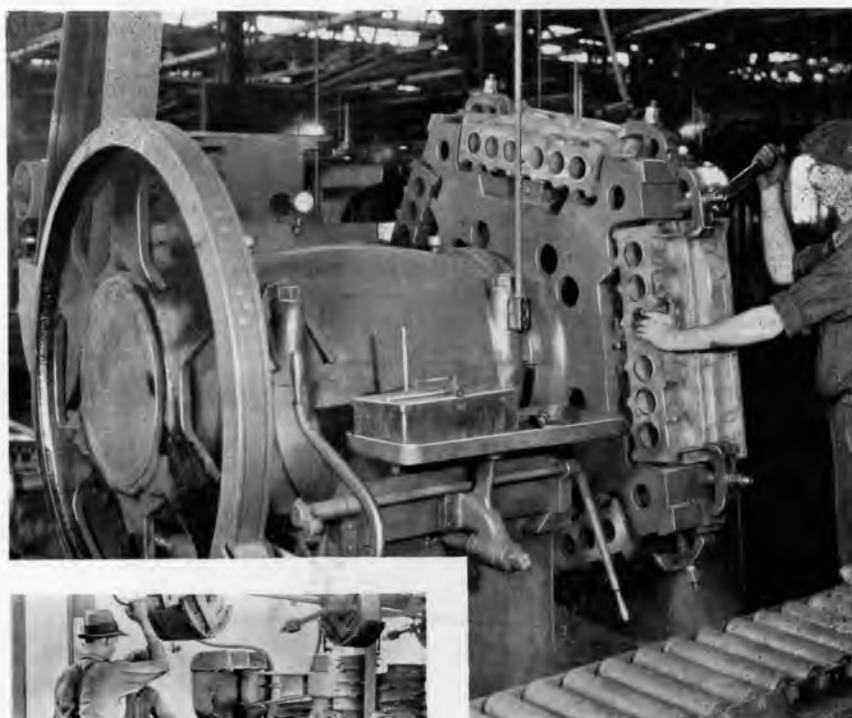
Plant buildings and office of the Eclipse Manufacturing Company in Walkerville, Ont.

Engine and Transmission

FROM the time that the rough cast engine block is received from a Canadian foundry, it is subjected to the most extensive steps in its preparation before a single other part is added. A weighty mass, it is a product of the oldest craftsman's art, the ironmonger's. To machine this most important unit of the car into useful form is a gigantic task. It must be milled on all four sides. Cylinders must be bored to limits of 1/10,000th of an inch, valve seats must be trued, water jacket outlets and intakes must be fitted perfectly. Bolt holes must be drilled and crankshaft channels must be babbitted.

Weighty as the engine block is, engineers have created machines with cutting and drilling tools that complete each job with apparent ease and precision. Inspection methods after each operation assure perfection.

As the process of shaping and drilling progresses the drab casting becomes shiny, clean, and emerges as it should—the heart and power centre of the projected engine. Pistons, camshaft, crankshaft, valves, cylinder head, crankcase, all converge at the engine assembly line to finally disgorge the completed power



Milling the top surface of engine blocks. Five blocks at a time—a continuous operation.



Moulding grey iron castings in the plant of the Walker Metal Products Company in Walkerville, Ontario. This concern specializes, in all grey iron castings for machining and assembling in the Walkerville motor plant of General Motors of Canada Limited.



Final polishing and surfacing of crankshaft bearings in one operation before going to the inspection test of static and dynamic balancing. This shows one of the machine attendants making a machine adjustment in the Walkerville plant of General Motors.



A battery of drilling machines in the G.M. motor plant, Walkerville, Ontario, that ream in one operation the twelve valve chambers of a Chevrolet engine. In this department the progressive method of production is maintained as in all other G.M. plants.

plant at the test stands. There each engine is run in by an electric motor, tested and checked for installation in the chassis at its proper place on the final assembly line. In producing the engine, General Motors relies on a group of supply sources throughout Canada for the various specialized units entering into the completed engine. Besides the engine block casting, made by independent foundries in Walkerville, there are pistons, piston rings and pins, camshafts and crankshafts, all supplied by firms in various cities throughout Canada. Electrical units in the form of batteries, spark plugs, generators, distributors, coils, wiring, head-lamps, horns, bring to light another important division of manufacturing that looks to the production of the automobile as an outlet for its many products.

These industries in turn rely on many of Canada's basic resources for the manufacture of their products. In the engine's consumption of gasoline another group of industries contribute their quota of equipment.



Installing crankshafts in Chevrolet engines on the engine assembly line at the Walkerville plant of General Motors of Canada. Every modern appliance for assisting workers is available in all divisions and departments of the company.



Moulding rubber fan belts in the plant of the Goodyear Tire & Rubber Company of Canada at Bowmanville.



Assembling clutches at the plant of General Motors in Walkerville. Completed clutches are made here.



Grinding machine producing piston pins in Thompson Products plant at St. Catharines.



Machining facings of camshafts at Walkerville plant. Turning at high speed, cutting tools slice into steel and finish parts with ease.



View showing the entire armature assembly line in the McKinnon Industries plant at St. Catharines.

FROM Hamilton, Windsor and St. Catharines the march of the parts continues in a steady stream to the receiving rooms at Oshawa, Walkerville and Regina. The engine must be kept well supplied. Clutch and transmission castings, forged camshafts, piston pins, all start production in a busy factory distant from final assembly line. Camshaft gears made from phenolic fabric that permit silent timing operation in the finally assembled engine are produced by Canadian Westinghouse, Hamilton, where thousands of workers are employed at peak periods. From this same factory come the light bulbs for assembly and for dealer stocks. Piston rings, piston pins and parts for the steering assembly all emanate from an independent factory that specializes in parts for the automobile industry. This plant of the Thompson Products Company, located in St. Catharines, will employ 200 men when their distributing plans for export markets are completed. Electric wire and generator parts are supplied in quantities by Canadian General Electric Company, Toronto and Peterborough.



Plant and offices of the Walker Metal Products Company in Walkerville, Ontario, suppliers of gray iron castings.



Aerial view of the West plant of the Canadian Westinghouse Company at Hamilton, suppliers of timing gears and light bulbs.

SOME twenty parts in an automobile require many different types of springs for their proper functioning. In the Hamilton plant of the Wallace Barnes Company, machines are busy producing about twenty different types of springs. These springs are incorporated in valves, carburetors, rocker arms, starters, generators, distributors and other parts of the body and chassis.

In St. Catharines, AC Spark Plug Company of Canada is busy producing the AC Spark Plugs which are standard on all General Motors automobiles.

In Toronto, the Wilkening Company specializes in producing the oil control piston rings such as are used throughout all General Motors car models. In addition to the specific parts that are sent complete to the engine assembly line for fitting to that unit, there are hundreds of small parts such as screws, bolts, nuts, rivets, washers, wire and metal stampings drawn from a diversified group of supply companies in all parts of Canada. To produce these articles they in turn are required to seek out and obtain supplies from concerns that supply basic materials from which they are able to shape and mould these small parts. This chain of supply units is endless and stretches to every corner of Canada and to overseas points throughout the Empire. New sources for materials are being brought to light from time to time.



Plant of the Wallace Barnes Company in Hamilton, suppliers of a wide variety of springs and parts for General Motors cars.



Drilling oil control vents in the piston rings made by the Wilkening Mfg. Company of Toronto. This firm specializes in the finest type piston rings that are used on all G.M. cars.



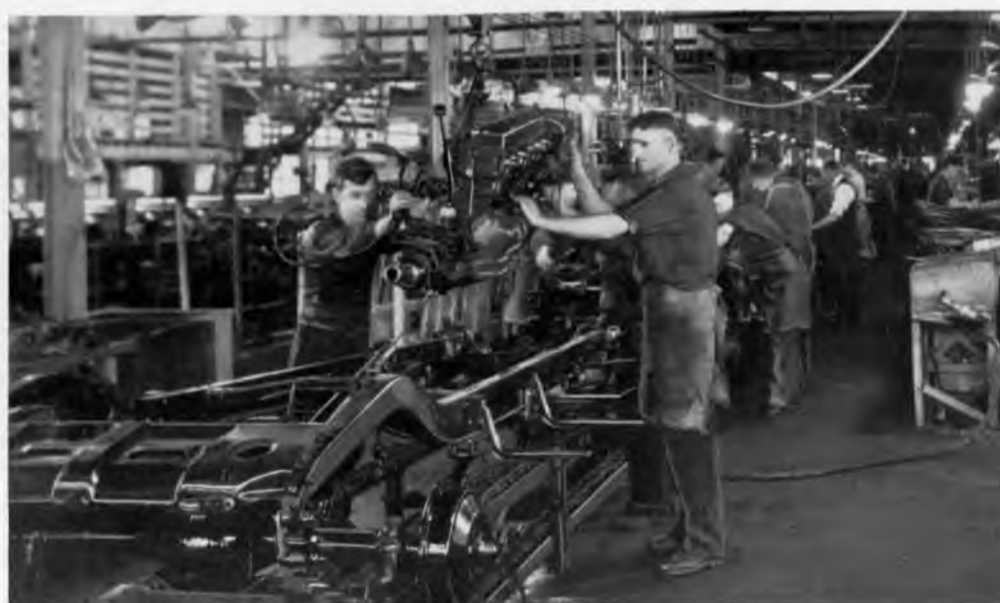
Above: Special spring making machines in Hamilton plant of Wallace Barnes Company, producers of special spring parts.



AC spark plug assembly line in St. Catharines plant of McKinnon Industries which produces spark plugs for the entire Canadian trade.



Installing the completed engine in the frame at the start of the final assembly line. A hundred yards along this line and it will be completed.



Steering Gear and Fuel System

THE steering gear must now be built and installed, and fuel system constructed and connected before the chassis reaches the finished state. In view of the strain on steering gears in modern traffic, and the necessity for constant dependability in fuel supply, the fuel and steering assemblies receive the same expert and accurate attention as the adjustment of the power plant. Materials for both these systems have been developed to a high degree of efficiency, so that there is no doubt of their ability to stand any practical test.

Steering gears for the cars that come off the assembly lines at Oshawa are built and finished in the St. Catharines plant of General Motors. The worm and the sector are the most important parts of the steering gear. They are made of drop forged steel, carefully cut and heat treated to stand the wear and strain to which they are subjected. The same craftsmanship is characteristic of the other parts of the steering assembly as they are finished at the St. Catharines plant.

The gas tank is constructed from sheet steel and is welded to form a completely sealed unit in the G.M. plant at Oshawa. Like many other units, the power rolling machine which turns out sheets of metal for the body of the gasoline tank, was developed in General Motors stamping plant.

The process of turning out tubing for the muffler tail pipe is an interesting example of the work in connection with the fuel system's manufacture. Strips of flat sheet steel are fed into a machine which forms the strip into a tube. As the rough tube emerges, a device welds the seam, chips off superfluous weld, and grinds the seam. The completed tube is then cut to the desired length.

The cover for the gasoline tank, of heavier material than the body of the tank itself, is pressed complete from a single sheet of flat steel by heavy presses in the Oshawa plant.

Factories other than those of General Motors of Canada supply some of the parts of the fuel system assembly. The copper and brass tubing is supplied by several independent sources who have specialized in producing for this never ending market of the automobile.

Steering gear assembly line at plant of McKinnon Industries, unit of General Motors, in St. Catharines, where complete steering unit is assembled.



Flat sheets of steel being formed into finished muffler tail pipe in special machines at the General Motors of Canada, Limited, Oshawa plant.



Forming body of gasoline tank from sheet steel on a special power rolling machine in the gas tank department.



Gas tank covers are formed in one operation from a single sheet of heavy flat steel in G.M. tank department, Oshawa.

Battery, Splash Guards, Brackets

THE making of storage batteries is one large Canadian industry that depends on the motor car for its existence. The Prest-O-Lite Company, which supplies batteries in considerable quantities for General Motors of Canada, has a large modern plant at Toronto, turning out batteries exclusively of Canadian materials. This industry shows noteworthy development since it first manufactured storage batteries in a small factory at Merritton in 1915. Then only a few of the manufacturing processes were carried on in Canada, many of the parts being imported from the United States.

With the raw materials required in battery making now available in Canada it is possible for the supply source in Canada to incorporate an increasing amount of Canadian content. Processing and fabrication of the completed batteries, of course, is carried out in the Toronto factory for shipment to the assembly lines at Walkerville, Oshawa and Regina.



Toronto plant of Prest-O-Lite Storage Battery Co. Limited, which supplies batteries for Oshawa.



Installing storage battery in chassis of car at Oshawa.



Trimming grid castings for batteries in the Prest-O-Lite factory in Toronto, Ont.



Separators for batteries are carefully tested before being built into container.



Finished storage batteries ready for shipment from main supply source in Toronto.



Front motor splash guards being stamped from sheet steel in one operation. Being in one piece assembly to frame is easy.

AT ABOUT the same stage as batteries enter the assembly of the complete car, are the motor splash guards and fender brackets. These units are produced in the stamping plant of General Motors at Oshawa, the machines used being capable of turning out the shaped and finished parts from single flat pieces of steel, cut to shape.

A group of skilled die makers are constantly at work at Oshawa fashioning the dies and tools that are necessary to keep the giant stamping machines operating at production capacity.



This front fender bracket is produced in a single operation from a stamping unit in the main plant of G.M. at Oshawa, Ont.

TIRES and WHEELS

TIRES for automobiles produced in Canada constitute approximately half the output of the great rubber factories of the Dominion. General Motors of Canada is by far the largest individual consumer of made-in-Canada tires. As standard equipment on all cars turned out, Goodyear and Dominion tires are used, and in the vast factories of the Dominion Rubber Company, Limited, and the Goodyear Tire and Rubber Company of Canada there is steady activity resulting from the car-building program at Oshawa.

Manufacture of tires by these large Canadian companies is a big item in Canada's industrial life. The transformation from raw material to finished product is complete in the Canadian factories. Plantation rubber comes in bales or boxes, chiefly from the Middle East, from Sumatra, Malaya, Ceylon, India, and Cochin-China. The other chief elements in the finished tire are fabric and various compounds, and these meet and merge at different stages in the production process. Cord fabric comes from auxiliary factories, and the rubberizing of this fabric is completed before it goes to the tire-building machines and vulcanizers.

Moulded and extruded rubber parts are supplied by Canadian Goodrich Company, Limited, Kitchener.

From Kelsey Wheel Company, Windsor, Ontario, wheels are bought, completely made, for assembly to cars. This operation takes place shortly after the engine has been mounted in the frame.



A tire made in Kitchener is mounted on a wheel made in Windsor and it is assembled to the car in the General Motors plant at Oshawa.



Kitchener plant of the Dominion Rubber Company, another large supply source of tires and tubes for General Motors cars. This company also maintains factories at Toronto and in Montreal and produces a wide variety of rubber products for industrial and consumer uses.



Tire cord and tire fabric is made in this plant of the Goodyear Tire and Rubber Company at St. Hyacinthe, Que.



Factory of the Goodyear Tire & Rubber Company at New Toronto where tires are manufactured for shipment to Oshawa to be mounted on wheels for assembly to the completed automobile. In this giant factory rubber compound is combined with the fabric made in Quebec Mills.



Rubber storage room in tire factory with bales of raw material prior to processing for inner tubes and for rubberizing fabric.



Rubberizing tire fabric in New Toronto factory. There, machines apply rubber compound to the rolls of cord fabric.



Inspecting fabric before it is used in tire making in New Toronto factory of a large rubber manufacturer supplying G.M. cars.



Tire building in the initial stages of building up layers of rubberized fabric to the proper grade and thickness.



Tube making on a battery of tube forming machines in a Kitchener tire factory supplying tires and tubes to G.M., Oshawa.



Fabrication process in one of the Canadian tire and rubber plants supplying General Motors with tires and rubber accessories.



Inspection of tires for uniformity, size, balance and physical qualities is most important. Inspection room in tire factory.



Finished tubes being tested for leakage in water before packing and shipping to the G.M. plants. Department of Goodyear plant.



Wheels in the washing process before bonderizing in the tanks at Oshawa. This process of bonderizing metal parts really seals the metal against wear and tear of the elements and it is applied to the clear metal parts before painting and polishing.



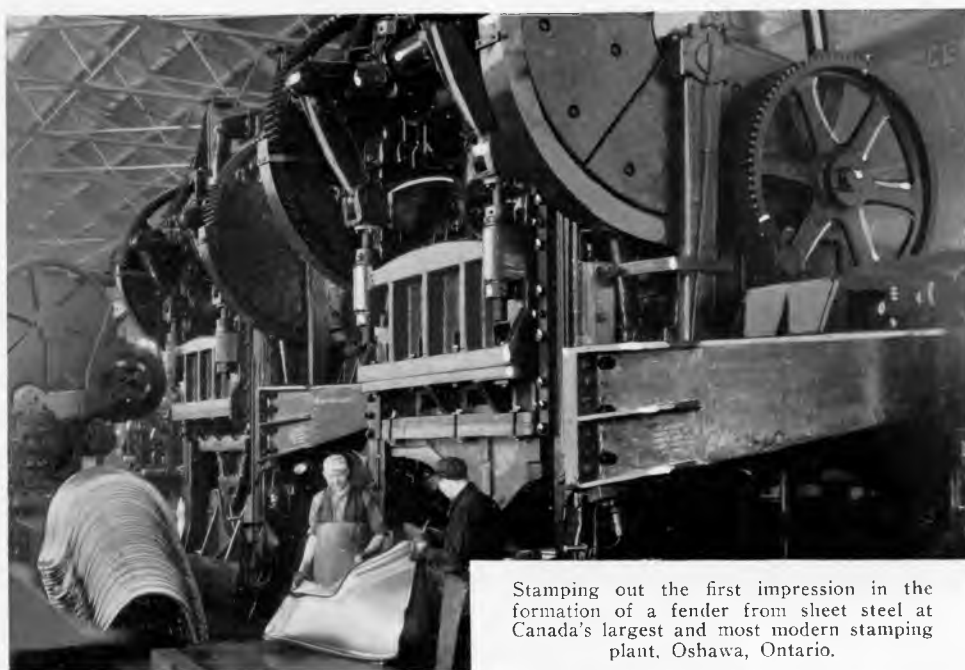
Chevrolet hub cap after it has been through a series of stampings in the presses of the G.M. plant at Oshawa. The final imprint is shown.



Assembling completed wheel and tire to chassis in G.M. plant at Oshawa. Wheel racks on each side of line show how units are delivered to the main assembly line from tire and wheel department.

Fenders and Running Boards

MIGHTY presses shape and form smooth, flawless, yet strong fenders that add to the comfort and appearance of every General Motors car. In equally synchronized operations running boards emerge ready for their ribbed covering of rubber. As separate units the running boards and fenders are painted and enamelled for final finish before taking their appointed place on the car on the final assembly line. Back of these apparently easy operations where steel is fashioned by the touch of a button, there is the care and precision spread over days and months in preparation of tools and dies. In keeping with precision and modern methods of shop practice, almost human machines now turn out these dies. Handwork by skilled die makers brings the dies to the last minute fraction of perfection that is required in these giant yet simple operations at the Oshawa plant.



Stamping out the first impression in the formation of a fender from sheet steel at Canada's largest and most modern stamping plant, Oshawa, Ontario.



Front fenders and running boards skirting after bonderizing and enamelling on their way to final assembly line.



This die making machine cuts and shapes metal dies from the wooden pattern original with matchless skill.



First operation in making the running board from flat sheet steel in the General Motors stamping plant at Oshawa.



Aerial view of the Bowmanville plant of Goodyear Tire and Rubber Company which supplies rubber parts.

Rubber covering after being vulcanized to steel running board at the Goodyear plant in Bowmanville.



THE BODY

THE forest wealth of Canada contributes to the wood-and-steel bodies by Fisher, which are an exclusive feature of the cars produced by General Motors of Canada, Limited. Fisher body manufacture is a subsidiary operation at the Oshawa works, and the celebrated Fisher emblem goes on all closed bodies, assuring purchasers of the finest, safest, and sturdiest type of body construction—the durable combination of selected hardwood and steel. The principle of wood-and-steel construction is illustrated by a simple experiment: A tube of light body metal is easily bent; but when it is reinforced with a close-fitting cylinder of wood, it offers great strength and safety. This principle is applied to building of Fisher bodies. All joints in the selected hardwood frame are fitted, glued, and screwed together. Special steel braces are added. Then the steel body panels are built over this carefully selected and rigidly braced hardwood frame. In addition to strength and safety, the Fisher name connotes smartness and luxurious finish.



Hardwood from Canadian forests goes into the making of Fisher bodies. Above is shown a typical logging scene in a Northern Quebec lumber camp. The finest grades of lumber are used in the foundation, sills and roof.

The source of the raw material for the wood part of the motor car bodies is the Canadian forest. The choicest hardwood is selected. The amount of timber purchased by General Motors of Canada is a considerable item in the Canadian lumbering industry,

which incidentally is the second most important industry in Canada depending on the forest for its raw materials. The whole group of wood and paper-using industries in Canada ranks first among similar groups of industries in capital investment, number of employees, wages and salary paid, and net value of products. In 1930 the total value of capital invested was \$1,221,357,252. The employees numbered 156,724, and the gross value of production was \$636,599,911.

These figures are cited to show the importance in Canada's economic structure of only one of the primary and associated industries to which the motor car builder lends support as the automobile of today progresses to its finished state.

It might be well to mention at this time the additional uses for wood

that make the automobile industry one of the best customers of the forest. Great quantities of lumber are used in making the crates for export shipments. Packing cases containing service parts and for other routine uses, require lumber.





Battery of wood drying kilns for seasoning hardwood, which will be used in the making of Fisher bodies. Great quantities of Canadian wood are used in the G.M. Oshawa plant.



View of shaping machine with vertical knives in the Oshawa body plant. These knives must travel at high speed to shape the curved sections of body work before assembly.



A Lynderman machine in which sections of hardwood are fed to be tongued and grooved. During this same operation these parts are glued to be used in body work as a unit.



Assembly of body foundation. In this department the body frame is mounted on the floor stringers, with door pillars and body sills attached. This is the beginning of the well known Fisher body of steel and hardwood.



Hardwood body parts being drilled and finished in the mill room at Oshawa. Wood-working craftsmen are responsible for the superior work in Fisher bodies.



Showing assembly of the famous Fisher bow and slat constructed roof. Selected hardwood of the finest grade is used in all the parts of this important body unit.



Assembly in a jig of the top, sides and foundation of a body. This method of jig assembly assures standardization of construction and speeds production at all times.



Complete body frame immediately after it emerges from a special dipping in water-proofing varnish. This precaution against the effect of heat and moisture is necessary.



Assembling the metal body units to the frame of hardwood in the process of forming the Fisher body of steel and wood construction. This operation is carried out at the beginning of the body line in the Fisher body plant, division of General Motors of Canada, at Oshawa, Ontario.

The Body . . .

Paint and Lacquer

THE detail and care in painting and polishing the body of a General Motors automobile is a gigantic task in itself. But even before the primer and filler coats are applied to the body there is the preparatory work that must be done to permit the progressive method of finishing being carried out in the proper order. This entails the mixing of colors, sanding and polishing of the metal parts to absorb and take the paint and lacquer as it is applied. Several Canadian manufacturers furnish this division of manufacture with the paint and lacquer.



Marking the grained finish on steel garnish mouldings for interior of car bodies in one operation at main plant of G.M. in Oshawa.



Blending a batch of Duco lacquer in the Toronto plant of Canadian Industries, Ltd. This firm supplies considerable of the "paint" materials for General Motors of Canada. Blending lacquer is delicate work.



Hand rubbing body metal to make panels absolutely smooth is necessary before the duco spraying process can be carried out to give that polished and shiny finish.



Final lacquer spraying operation in color before the finished job goes through the baking ovens. The baking process necessitates high, even temperatures.



Bodies emerging from the lacquer baking ovens in G.M. body plant at Oshawa. After this baking they are color trimmed around windows and doors and then finally polished.



Lacquer for car spraying in its final mixing process in the plant of Canadian Industries, Ltd., Toronto. Duco spraying of car bodies necessitates a special method of mixing.



Polishing the car body after the final lacquer operation with electric buffing machines. Great care and specially trained workmen are only able to produce the high polish.



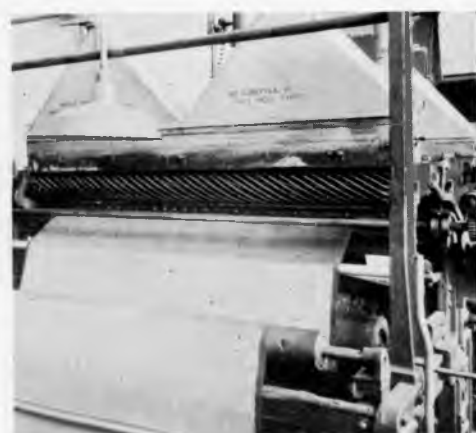
Sorting wool in an upholstery plant before being carded and loomed to make plush cloth.



Upholstery fabric on the edging machine before being shipped to Oshawa for body trimming.



Wool yarn going through pre-loom operation in a Quebec plant; later it becomes velour.



Trimming the nap on upholstery cloth before going to the edging machines for final rolling.



Primary operation of weaving upholstery cloth in the plant of Collins & Aikman, Farnham.



Moulding rubber window groove strips in the Kitchener plant of the Canadian Goodrich Co.



Loom room of the textile plant of Collins & Aikman at Farnham, Quebec. This is one of the many plants supplying upholstery material to G.M.

The Body . . . "Trim"

WOOL and mohair from the backs of sheep and goats passes through many hands and machines before it emerges as velour and mohair fabric to be used in the trimming and upholstery of the Fisher bodies, available only on General Motors automobiles.

Rubber factories in Kitchener hum with activity to the demand for rubber door insulators, window channels and door shocks.

Floor mats, beading and incidental accessories stimulate activity in other centres of Canada to contribute to making "the living room on wheels" comfortable and luxurious. Each of the organizations in turn draws on a great number of supply firms to keep its looms, spindles and other equipment operating efficiently.



The Kitchener, Ontario, plant of the B. F. Goodrich Rubber Company.



Toronto factory of the Toronto Carpet Mfg. Co., producers of high grade fabrics.



Main plant of Collins & Aikman of Canada, Ltd., Farnham, Quebec, upholstery specialists.

The Body . . . "Trim"

STARTING with the spraying of a sound-deadening emulsion to the bare metal interior parts of the body, there are dozens of articles supplied from various cities in Canada contributing to the faultless trimming of a Fisher body in the General Motors plants in Canada.

Cloth, paper, upholstery filling, springs, and even the tacks, nails and screws require the attention of a wide variety of supply companies in Quebec and Ontario. Textile mills in Renfrew, looms in Magog, Quebec, paper factories in Toronto and a roofing plant in Brantford have specialized in producing materials that are incorporated in the Fisher bodies produced in Oshawa, Ont.



Main plant and office building of the Brantford Roofing Company, Brantford, Ontario.



Plants of the Dominion Textile Company, producers of trim fabric, Magog, Quebec.



Plants of the Renfrew Woollen Mills, producers of upholstery fabrics, Renfrew, Ontario.



Trimming and upholstering the interior of automobile bodies in the plant of the Fisher Body Division of General Motors at Oshawa, Ontario. This method of progressive production is standard throughout the automobile industry.



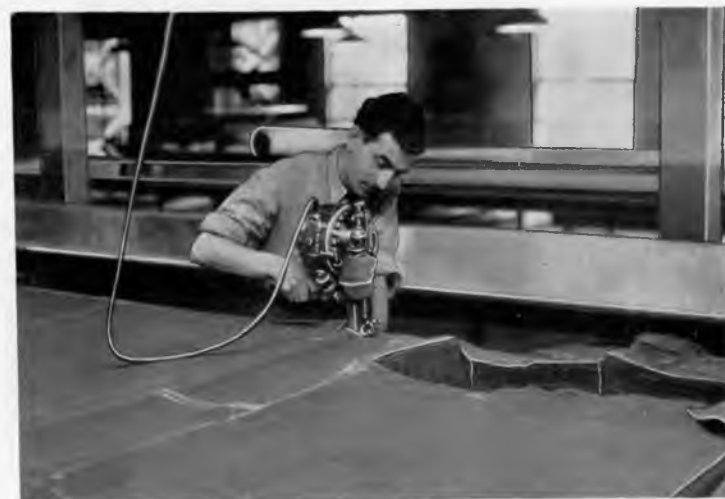
Sewing fabric on a dash liner in plant of Sommerville Paper Box Company, Walkerville, Ontario.



Emulsion plant of the Brantford Roofing Company, producers of sound proofing body materials.



Carding or straightening of the wool fibres for spinning into yarn. This machine is in the main plant of the Renfrew Woollen Mills, Renfrew.



Cutting cloth by power machine in G.M. plant at Oshawa. By this method many thicknesses of cloth are cut to pattern in a single operation.



This machine is forming garnish mouldings from flat sheet steel in the Oshawa metal stamping department of General Motors.

- - and a multiplicity of other products and operations enter into what the industry terms "Body Trim"



Section of the sewing room at Oshawa where upholstery fabrics are cut and sewn to pattern before body trimming.



Packing and trimming seat and back cushion upholstery padding in Windsor plant of the Windsor Bedding Co., Limited.

MANUFACTURING firms that once produced springs for such homely items as beds, chairs, and lounges, now look to the automobile industry as their best customer. Factories that once made comforters, bedding materials and other household articles have installed intricate and efficient machinery to take care of this new and appreciated demand of the ever-changing automobile.



Loom for weaving special upholstery material in the textile plant of the Schlegel Company of Canada, Limited, Toronto.



Fabricating roof padding material in the plant of the Windsor Bedding Company, in the Border Cities, for Fisher Bodies.



The spring padding for closed car seat upholstery requires special machinery in the plant of Windsor Bedding Company.



Assembling springs for seat and back cushions in plant of the L. A. Young Industries, Limited, Windsor, Ontario.



Rubber compound and fabric are formed into fabrikoid roofing material in this anchoring operation between huge rollers in the plant of Canadian Industries, Limited. This roofing material for car bodies was developed after years of research and test.



Fitting the top deck roofing material to the body of a car on the body assembly line at Oshawa. Production on this line is similar to the progressive method of production on all lines in the various divisions of General Motors of Canada, Limited.

The Body . . .

Glass and Hardware

THE demand for hardware and glassware by the automotive industry has in the past ten years supplied an impetus to the concerns supplying this material until today these same firms are dependent on the success and activity of the automobile industry for their existence. Glass for windshields, doors and windows requires the attention of a large, modern glass factory in Oshawa. The W. E. Phillips Company, Limited has specialized in the glass for General Motors cars, and through proximity to the main plant of their largest customer they are able to govern their production and manufacture most efficiently. Body hardware in the form of door handles, locks, window cranks, ash receivers and match holders is made and plated in the Oshawa plant of Coulter Manufacturing Company and sent to the General Motors plants.



Oshawa plant of the W. E. Phillips Co. Limited, producers of glass units.



Body hardware is produced here in the Oshawa plant of Coulter Mfg. Co.



Beveling window glass in plant of W. E. Phillips Co.



Silvering rear view mirrors by W. E. Phillips Co.



Nickel plating department of Coulter Mfg. Co. in Oshawa.



Buffing headlamp brackets and door handles, Oshawa.



Countersinking door lock frame plates in Coulter plant.



Assembling the glass in doors and windshield on body, Oshawa.



Door handles and window controls being assembled to body in the Oshawa factory.



Battery of high speed wire drawing machines in plant of the Canada Wire and Cable Co., at Leaside.



Wire saturating vat in the plant of the Canadian General Electric Company, Peterborough, Ontario.

Braiding of conductor wire, Canada Wire and Cable Co.



Assembling the wiring harness for General Motors cars.



Instruments being wired and installed on board in the General Motors plant at Oshawa.



Where body meets the chassis on the final assembly line at Oshawa. Suspended from the floor overhead the body joins the chassis and it emerges at the end of the line a new and efficient car.

The Body . . .

Wiring and Instruments

BENEATH the upholstery and metal panels of every automobile there is a very complete electrical system much of which is fabricated in a manufacturing plant in Toronto. The plant of the Canada Wire and Cable Company produces the electrical wiring harness that provides for power to be furnished the dome lights, tail lights, instrument board lighting, parking lamps, headlamps, horn and starter circuits. From the Peterborough plant of the Canadian General Electric Company is obtained wire for different wiring assemblies made in the General Motors electrical equipment department at Oshawa. It is with pride that the automobile industry points to the accomplishments and improvements of the supply companies who continually search for better products to improve the now established efficient functioning of the modern automobile.



Leaside plant of the Canada Wire and Cable Co., suppliers of wire for General Motors cars.



Peterborough works of the Canadian General Electric Co., supply source.

The Radiator, Hood *and* Lamps

MANY of Canada's basic minerals enter into the production of a General Motors radiator. Large quantities of raw materials go into the lead solder produced in a Montreal foundry, the copper rolls in a plant in New Toronto and nickel at Copper Cliff. In addition, rubber tubing is made in a rubber factory in the town of Bowmanville. When these products meet in the radiator plant of General Motors at Oshawa, they are shaped, moulded and soldered to take their final shape in a radiator shell that is also made and plated in the same plant. This valuable unit becomes a vital part of the automobile when the outlet and inlet hose connections are made to the engine.

In producing the now well known Harrison honeycomb type radiator for all the cars in the General Motors line, it was



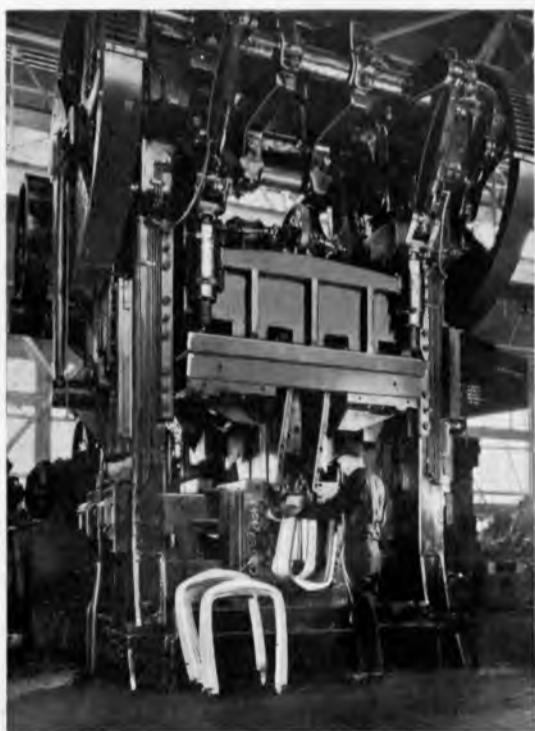
Assembling radiator and stay rods on an almost completed Chevrolet car on the final assembly line at the G.M. plant, Oshawa. At this point on the line completed parts find their proper place on the chassis.

necessary to set up a manufacturing unit within the Oshawa plant. As radiators of different sizes were required this department had to be organized to adjust its operations on a scale demanding both quantity and precision of finished radiators. This method of production demands the most careful planning so as to permit the production of a sufficient number of different radiator types for the daily demands of the diversified production being carried out on the final assembly line. Special machines developed by plant

engineers are now in use that permit uninterrupted radiator production for such a wide variety of models as are required on the entire General Motors line, both for automobiles and trucks.



Stamping and forming the honeycomb vertical units of a Chevrolet radiator in the radiator department of the General Motors plant at Oshawa. Progressive assembly is used here, too.



View of the huge press which stamps radiator shells from sheet steel in one impression. Dies for this press are costly and require the most skillful operation.



Lead solder wire being formed by hydraulic press from lead billets in plant of Mount Royal Metal Co. in Montreal. Solder is used in radiator making.



Assembling radiator core in master form prior to soldering operation in radiator department at General Motors, Oshawa plant.



Forming radiator hose tubing in Bowmanville plant of the Goodyear Co. of Canada. Rubber and fabric are combined in this machine to produce the hose tubing.

In order to withstand the shocks and bumps of driving, it is necessary that the light bulbs and method of attachment to the various sockets be the very strongest and simplest. These bulbs, specially designed and made by the Canadian Westinghouse Company and Canadian General Electric Co. are tested to meet the exacting demands of the General Motors inspectors. In every automobile there are at least six light bulbs and in some models the requirements are even greater. By law it is necessary that these bulbs operate at all times, particularly the tail and stop-light bulbs, which are in use day and night.

During the past few years a great deal of attention has been given to the selling and merchandising of light bulbs for automobiles.

In many cases the average motorist carries an extra supply of bulbs for every outlet socket on his car. General Motors parts and service depots throughout Canada have maintained a consistent effort to see that such a necessary item as light bulbs are on hand and available for customers on demand. With highways crowded as they are today it is important that every safety precaution be made.

In the past few years a great deal of attention has been paid to the design and operation of the automobile hood. In some instances the opening and closing of the hood was an ordeal. It at one time led to bruised fingers, shattered nerves and usually when the white gloves of the fair sex came in contact with the hood catches it was unfortunate. Hinges, louvres and automatic hood catches now make entry to the engine a simple and easy operation. The elegance of the new hoods on all



Stamping out hood-catch parts in the Belleville plants of the Stewart-Warner Company.

General Motors cars have created the present trend of hood design for the entire industry. Originated in the fine Cadillac models it has been included in Chevrolet, Pontiac, Oldsmobile, McLaughlin-Buick and La Salle. Materials for this unit are supplied in unfinished and completed units by supply sources in Ontario centres. The special hood-locking



Operator in the plant of the Westinghouse Electric making light bulbs.



Main plant of the Westinghouse Company of Canada in Hamilton where electric light bulbs for automobiles are produced. At peak periods this plant employs thousands of operators.



Westinghouse Electric plant operator inserting light bulb element into bulb for assembly into butt holder to produce the complete bulb unit.

mechanism is made in the Stewart-Warner plant in Belleville, Ontario, shipped to Oshawa and installed in the hood department there. In this department the hood tops and sides are stamped and prepared for assembly to the chassis in its proper place on the line. This procedure of attaching the hood is carried out with the ease and uniformity that is only made possible by the standardized methods so necessary in the actual production of all G.M. automobiles.

At the right is the assembly of the hood to a motor car on the final assembly line of the General Motors plant at Oshawa, Ontario.

The side of the hood is shown below being stamped out of a single piece of steel in the G.M. plant at Oshawa. This operation makes the hood port openings.



Gasoline, Oil and Grease

Lubrication and service are the two most important items in the operation of an automobile and without them, motoring satisfaction would be impossible.



RESPONDING to the demands made upon it by the automobile, there has developed a new, gigantic industry to care for the ever hungry maw of the motor car. Engine, frame, wheels and all the moving and wearing parts of the car require the lubrication that only oil in its various forms can give. It is the ever present battle against friction and heat. The sources of supply for this industry are in isolated sections of western Canada and far off oil fields in Peru. Through its far flung organization it has set up factories and refineries in all the large cities in Canada. An army of employees are busy attending to distribution and sale in every corner and

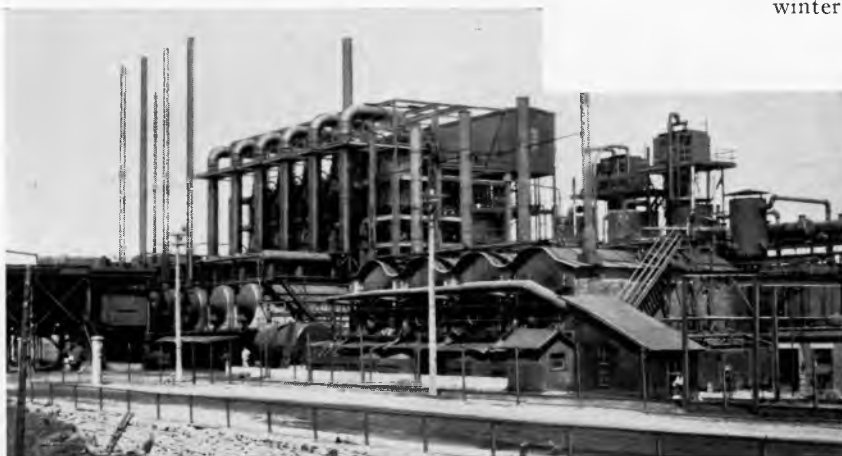


Oil well in Turner Valley, Alberta, during winter operations.

crossroad in Canada. In addition to the amount of gas, oil and grease consumed by the automobiles in use throughout the Dominion, there is a great volume of oil and grease used in the manufacturing and machining of parts that contribute to the finished automobile. Oil is used in great quantities for quenching and tempering steel bumpers, gears and pinions. In many of the busy factories the machines that are working on the production of car parts must be kept greased and oiled to insure smooth operation and a minimum of wear on the tools and shafts that whirr at terrific speeds to keep step with the demand for their output. Without this oily film of safety that guards all wearing parts from friction, the automobile would not be possible. With the universal use of the automobile it is necessary that this product be available throughout the Dominion, in some cases, day and night.



Flare lighted by well in Turner Valley when it blew in during 1924 and which has been a splendid producer since that time.



Vacuum and rerun still in Ontario. In this giant plant, crude oil is subjected to all the various refining and cracking processes. This gigantic industry operates refineries in many points, while warehouses throughout Canada provide unfailing supplies for motorists.



Tankers, large and small, for inland lake and river shipping as well as giant tankers that bring the cargoes of crude up the Pacific and Atlantic seaboard to the refineries and distributing warehouses in the Dominion. These two tankers represent lake and ocean cargo carriers.

Inspection and Final Test

WATCHING a chassis take shape with the mounting of the body and other parts on the final assembly is an experience of interest to all who visit General Motors' plant, Oshawa. But to see the completed car suddenly come to life and roll off the end of the line under its own power seems almost like black magic. A few minutes back on the assembly line it was an inanimate collection of parts. But here, at the end of the line, following its final inspection, gasoline is added, water fills the radiator, the starter is kicked, and with a triumphant purr the shining and resplendent car flashes through the open door to the test track. From a maze of intricate parts and fabrics there has been created a unit of personal transportation that represents in dollars and cents the greatest value obtainable today. And it has been created and completed with a minimum of time and effort, due to the modern and most up-to-date engineering methods ever produced by man. Around the test track the new car receives its first roading under the inspection of the test operator. Checking of every phase of car operation is made on this test and the car, if necessary, is further adjusted and checked in the "reject test shop." Another road test and check and the completed car is driven to the shipping floor or the drive-away terminal for the delivery to dealers.

Inspection is an operation in all departments of production throughout



Final line inspection of the completed car just before it is to be driven off the line under its own power. Gas, oil and water are added after this inspection to permit starting and proper functioning of the engine on its first dash under power from the end of the assembly line.

General Motors plants of equal importance to the actual making of the parts. All along the final assembly line and throughout the other supply lines there are inspectors whose gauge is perfection. This close scrutiny by gauges, balancers, and also by touch and by sight accounts for the speed and ease of assembly which

really permit that finished automobile to get under its own power so easily. Such inspection methods all the way down the final assembly line guarantee a perfect car. This standardization of production is known throughout the entire world and General Motors cars and trucks perform consistently and well.



View of the test track with banked turns which permit speed test as well as regular roading tests at the General Motors plant, Oshawa. Every car from the final assembly line is taken around this track by the chief inspector and his assistants who check all performance.



Interior of the reject test shop where minor adjustments are made after roading on the test track by the inspection staff. When the cars leave this shop for the shipping floor or the drive-away terminal they are prepared for the road tests of the new car owner.

Bumpers . . . then the "Driveaway"

BUMPERS for all General Motors cars are made by the Skinner Company, Limited, of Oshawa. This unit of supply has kept step with the demand for new designs in such a prosaic field as bumpers and turns out a product that is finished and proportioned to blend in beauty with the many fine accessories now found on G.M. cars. From spring steel of the right analysis, the bumper bars are cut to length, heated, formed to shape and quenched in oil. In a conveyor type draw furnace the bars are given their desired spring or Brinell hardness. Polished, plated with a heavy deposit of copper and nickel, they are then buffed bright and then chrome plated to appear in their final lustre for exposure to the air and elements. Even the clamps and end bolts are polished and chrome plated in the same careful manner as the bumper bars. After being properly processed and assembled the bumpers are given their final inspection before being shipped to the receiving room of General Motors.

Bumpers are added to the car after it has been driven off the final assembly line. After driving tests and checking the car is passed on to the loading platform or "driveaway" terminal for delivery to dealers.

Another modern activity created by the methods of production of the automobile is the driveaway. It signifies a distinct use of the car in furnishing its own transportation from

Oshawa plant of Skinner Mfg. Co. where bumpers for all G.M. cars are constructed and plated, after which they are shipped to assembly plant where they are attached to completed cars.



Tempering bumpers for hardness in the Oshawa plant of the Skinner Mfg. Co. in a special oil tempering bath.



Plated and assembled bumper being fitted to frame on final assembly line just before the car is driven away under its own power to the driveaway terminal.

the plant where it originated to the dealer for delivery to the purchaser. It is taken advantage of only by the dealers who are within a short distance of the factory, as all of the shipments to other points go forward by rail. The method that is usually followed is for a car dealer to drive to the factory in one of his own cars with four or five of his employees. Each man will then drive the car back under its own power for delivery to a customer. Some dealers have taken advantage of the driveaway to bring the actual purchasers of the particular cars ordered to the factory and are thus able to give each purchaser a real picture of the care and quality incorporated in the car that he is buying.

During the busy season of car buying, the number of driveaway units on the highway is a fair barometer of the car buying conditions then current throughout that section of the Dominion. The driveaway indicates that the cars being produced daily must operate perfectly. Special "transit" licenses are provided by provincial governments for driveaway cars.



Completed automobiles at the driveaway terminal of General Motors at Oshawa. Dealers take delivery here and drive them under their own power to destination.

Domestic and Export Shipping



THE shipping of automobiles to destinations throughout Canada and the territories served by General Motors of Canada bring to light a very specialized department of the industry. Ingenious are the methods this shipping department of General Motors originated for crating cars bound for all the ports of the Empire.

In the shipping of cars to all Canadian dealers there is the intricate manner of getting five units into a freight car where three were formerly considered the limit.

As in other departments the same progressive method of accomplishment is followed in the shipping department. Especially is this necessary in the crating of a car for export shipment. In this work the car is knocked-down to chassis units, usually two in a case. In another unit the body for each chassis is

The picture on the left, above, shows Chevrolet automobiles being loaded into freight cars at the Oshawa plant of General Motors. Frequently five automobiles to a car.

On the right, above: Boxing chassis for export at the beginning of the shipping assembly line at Oshawa.

similarly crated. All plated parts are covered with oil paper and all exposed machine and engine parts are coated

with grease. The wooden cases are rugged and strong and the chassis is solidly fixed and bolted to the side of the crate. Waterproof and salt-sealing paper is lined between the two wooden walls of the crates. After closing and sealing they are reinforced with special wire and iron straps. Considerable lumber is required in the work of crating and shipping cars and parts to all dealers.

By means of this careful method in shipping, the delivered automobile is expected to function as perfectly as when it left the test inspector's department. Whether the car is delivered in Soerabaya or Prairie Junction, the purchaser has been educated to expect it to function without a hitch the very moment it is removed from the crate and assembled. Hence workers in the shipping department are trained to handle and ship cars with care.



Loading a shipment of automobiles aboard a lake carrier for delivery to dealers at ports on the Great Lakes. These shipments are made from Oshawa harbor and are made only during summer months.



A complete trainload of General Motors cars leaving Oshawa consigned to dealers and branches in distant points.

General Motors Trucks

ORGANIZED to meet the demand for a wide selection of fast and heavy hauling units, General Motors Trucks now furnish transportation for a great many organizations throughout Canada. The increase in the use of trucks for inter-city and inter-provincial freighting forced upon this division of General Motors of Canada a new task. They were urged to produce certain specific body and power types to meet the needs of the dairy shippers, produce and fruit organizations, oil and fuel contractors, furniture and beverage manufacturers, etc. Their success in doing so has resulted in lower cost hauling for many industries, and the adaption to this method of shipping continues throughout all lines of business. With the perfection of highways and roads it is now a usual procedure for a factory to have its daily production in the hands of a retailer the following day. Warehousing is unnecessary and the result is that retailers are now trained to expect prompt and fresh shipments of merchandise daily. As manufacturers of the greatest number of trucks for Canadian use, General Motors of Canada, Limited is also the largest user of the special parts that enter into the production of these units. Glass windows and windshields, steel stampings, frames,



General Motors trucks with dump bodies at the Oshawa docks handling the first cargo of Nova Scotia coal to use the water route to Ontario.

springs, tires, headlights, and accessories are all specialized parts and require special attention on the part of each supply company. From time to time there are new uses for which heavy hauling and fast trucks must be built. General Motors service engineers create the type of chassis and cab and apply the most suitable power unit to meet each new demand of the motor coach and trucking operator in this new and growing transport activity.

Final assembly line at the G.M. truck plant in Walkerville. Here trucks and trailers with capacities ranging from one to fifteen tons are built.



On the left — cab body is being lowered to truck chassis at the end of the final assembly line in the Walkerville plant of General Motors Truck Division.

Completed cabs for G.M. trucks are shown at the right. In the Walkerville body plant every type of body can be produced with the standardization of workmanship that is maintained throughout all General Motors production.



PEAKS and VALLEYS

PUBLIC preference for General Motors cars by car buyers in Canada has, during the past ten years, shown a steady increase. At the present time in Canada this preference is being shown by almost half the car buyers who have made purchases during the first half of 1932. Indeed, over 51 per cent. of all the cars registered during the first four months were G.M. cars. This increase in the percentage of all cars bought in Canada has grown from 19 per cent. in 1922 to the present high preference.

Due to the seasonal buying activity enforced by climatic conditions in Canada, an even production cost is not possible. Three months out of each year take up over half of the year's production. This, of course, necessitates an organized routine to handle the big demand during those three months, with the other nine months of the year supplying only a small share of the annual business. In spite of the high costs due to this distribution of production, G. M. cars

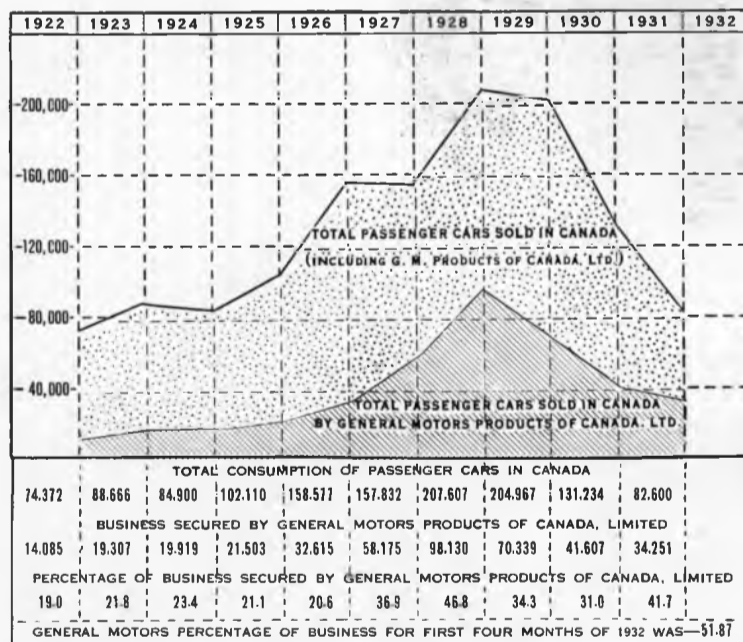


The car buying public continues to look to General Motors for the standard of motor car values in all price classes.

have been marketed at continually lower prices; the buying public have responded consistently, showing increasing preference during past decade for all G.M. car lines as indicated on the accompanying chart. With such an organization set up and functioning to provide the finest personalized transportation, it

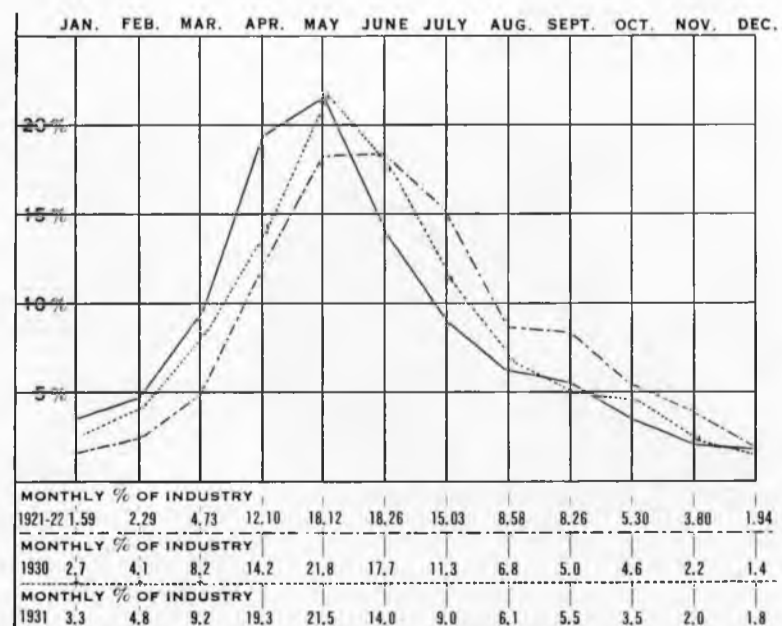
is of great importance that every effort be made to keep the wheels moving within this industry. Through vigorous and pioneering efforts certain outlets to markets within the Empire have been gained. This has meant that during the lull in buying in Canada, export orders from overseas have enabled the plants to maintain a certain degree of production of great value to the hundreds of families and the supply companies that look to G.M. of Canada as an outlet for their own products. In keeping with a generous policy of building and producing as much of the car in each country of delivery as possible, there are now production and assembly factories in South Africa, India, Australia, New Zealand and a dealer organization of sound business men in each of the export territories.

Maintenance of the position now enjoyed by G.M. cars in Canada, contributes to the well being of thousands of individuals throughout Canada. With the many divisions of the automobile industry affecting so many lives in all sections of the Dominion, it is very important that the motor car buyers should give consideration to this very fact when making their replacements, or new car purchases. Canadian purchasers are keeping this thought in mind, and their contributions to the industry are shown by continued activity in the supply field.



The above chart shows in detail the annual increase in the percentage of business gained by General Motors Products of Canada from the the figure of less than 20% in 1922 to the present high share in excess of 50% for four months, 1932.

The monthly summary at the right shows each month's share of the yearly production. The greatest production is obtained during the second three months of the year. During recent years this peak is reached earlier.



This

Is General Motors of Canada, *Limited* from the Atlantic to the Pacific

SERVING Canada from the Atlantic to the Pacific and from the Great Lakes on the south to the wide reaches of the Peace River on the north, General Motors of Canada is indeed Dominion wide. Every community, no matter how large or how small, feels the impetus of its activities. Its various operations include those of collecting, fashioning and distributing commodities and finished products. Its chain of contacts is never ending. It is always contributing.

As an instance, the lumberman buys a General Motors truck to haul his logs to the paper mill for conversion into newsprint. General Motors contributes heavily to the newspaper in the form of advertising which permits the newspapers to buy more newsprint and the lumberman has to haul more logs in his G.M. truck.

This contribution to Canada's daily needs is only possible by the giant plants and factories, branch offices and dealer units that spread all over the country. Under the direction of



Zone office of Maritimes located in St. John, N.B. This is Zone No. 8.

Oshawa, plants of every size and description fashion and produce the automobiles and trucks for every possible transportation need. The next line of service is the widespread zone office organization that is the contact between the thousand dealers and pulsing assembly lines at factories. Vast structures of steel, brick, cement and stone rear their roofs in Oshawa, Walkerville, St. Catharines and Regina. Branches



A direct factory branch for McLaughlin-Buick is located in this building in Montreal, Que.

and service units are found at St. John, Montreal, Toronto, Hamilton, London, Windsor, Winnipeg, Regina, Saskatoon, Calgary, Edmonton and Vancouver. Parts depots are also maintained throughout the entire Dominion, carrying in stock some 50,000 different parts, and the inventory of parts stock in hand in depots approximates \$5,000,000 in value.

Plants at Oshawa, Walkerville, St. Catharines and Regina have a peak



Cadillac, La Salle and Pontiac direct factory branch is located in this modern building in Montreal for sales and service.



Direct factory branch building occupied by the General Motors Truck and Coach Division, in Montreal, Que.

General Motors real estate holdings throughout Canada represent an investment of many millions



General Motors Products of Canada, Ltd., serve the Maritime Zone with all service parts from this building in Saint John, N.B.



Zone office and administration staffs for Montreal Zone are located in quarters in the Confederation Life Building, Montreal.



Some of the main plant and buildings of General Motors of Canada at the Oshawa headquarters of the company. To the left of the chimneys can be seen the main office building, housing the administrative staffs and offices.

capacity of 130,000 vehicles of various models every year. At the Oshawa plant there are 59 buildings devoted to automobile and truck production requiring two million feet of floor space.

With extreme faith in the future of the country General Motors is constantly enlarging its plants and branch outlets. This has necessitated the investment and expenditure of large sums in advance of market prospects but such contributions toward assisting the improvement of building conditions is in keeping with General Motors policy. As an instance of this policy, equipment and new processes have been originated in the St. Catharines plant of the McKinnon Industries to take care of an increasing amount of parts manufacturing in Canada.

Enlargements have been made at the Walkerville plant from time to

Buildings of the Walkerville factory are shown in this picture. The separate unit in the right foreground is the office building.



Night view of the large, modern office building of General Motors of Canada at Oshawa.

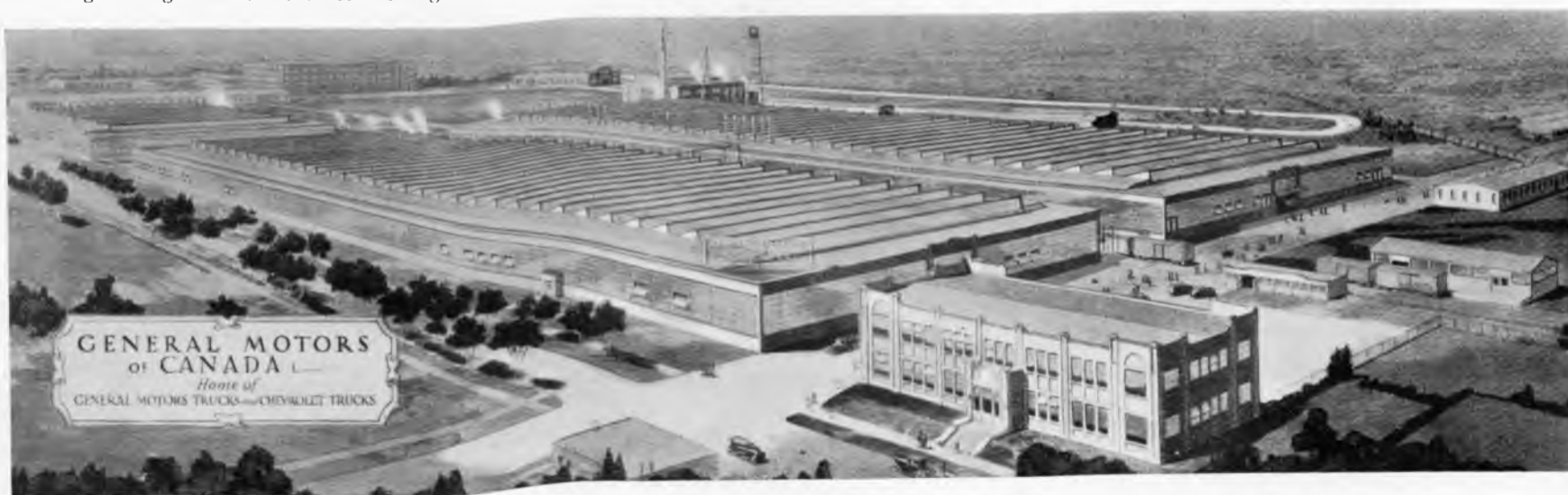
View of the Parts Building at the Oshawa headquarters of General Motors. More than 50,000 parts are stocked.



time to take care of the production of engines, axles, truck and bus bodies, and other parts for shipment to Oshawa. Every effort has been made to provide as even a production schedule in all plants as possible. Evenness of production can only be maintained by the substantial markets.



Aerial view of the plant and foundry of the McKinnon Industries unit of General Motors at St. Catharines, Ontario. In this plant are produced many of the completed parts such as axles, transmissions, motors for starting, generators and other parts for assembly.



Every week-day morning, zone offices in strategic centres across Canada open to a staff of clerks and travelling representatives. There are 8 zone offices, 15 retail branches, and a thousand dealers, representing General Motors in every town and city in Canada. The zone and branch outlets require a staff of almost a thousand employees. During peak seasons this number is increased. The investment in branch retail showrooms and service outlets in various cities across Canada runs into a sizable figure.

Cadillac-La Salle factory branches are maintained at Toronto and Montreal and carry staffs of 56 and 49 respectively.



Toronto zone office is in the York Piper Building, above.

in Canada, located at Toronto, has a staff of 48 members, with Montreal zone office next with 43. Other zone units are in proportion. In this way it is possible for a dealer to be within 24 hours of company representation, and it is also possible for a dealer quickly to obtain parts for any particular service job that he might be called upon in an emergency to perform.

In servicing so many different models of cars it is necessary that a tremendous number of parts be available at dealers' service departments throughout the country. It is estimated that there are approximately 50,000 parts listed, any one of which might be required by the

are required to carry a wide variety of parts for any General Motors model. It is in this merchandising of parts that the zone office must keep a constant check on dealers in the respective zones so that they will have available a reasonable supply of parts for service work. It is estimated that the total value of parts now on hand in dealers' parts stock rooms exceeds a million dollars.

In the General Motors parts depots a complete range of parts must be carried in stock for every model of every General Motors car produced in the past fifteen years. The constant supervision of shipping so many parts to so many outlets is an organization job in itself. The invoicing, collecting and inventorying of the stock is another awesome task. As dealer stocks are constantly changing and being renewed the organization behind service parts must be a mighty one.

In conjunction with General Motors parts and service program there is the General Motors Owner Service



Direct factory branch for the McLaughlin-Buick is located in this fine building on Gerrard St., Toronto, Ont.

McLaughlin-Buick factory branches are maintained at Montreal, Toronto, Hamilton, London, Winnipeg, Regina and Saskatoon. General Motors Truck branches are located at Montreal, Toronto, Hamilton, Windsor, Regina, Vancouver and Winnipeg. Two hundred employees are required to handle the work of servicing and maintenance in the branches of the truck and coach division. In addition to these branches there are, of course, retail dealerships which carry out similar selling and servicing work for all General Motors automobiles.

Zone offices throughout Canada maintain the supervision of dealers in their respective territories and this requires in each office an executive and administrative personnel as well as the sales and service contact with the dealers. The largest zone office



General Motors Trucks and Coaches are sold and serviced in this factory branch on Spadina Ave., Toronto, Ont.

owner of a General Motors car in some servicing operation. With more than 900 outlets for cars and servicing in Canada it is necessary that a



Windsor and the Border Cities are served from this direct factory branch for Cadillac, La Salle, Pontiac, and Trucks.

Policy which is a guarantee not only against defective materials and workmanship but provides free inspections at 500 and 1500 miles. Under the



Cadillac-La Salle direct factory branch in Toronto is in this Bay Street location. It is known as the McLaughlin Building, erected in 1926.

fairly complete stock of parts must be carried by each dealer for his individual car line. In addition there are parts depots in cities and towns that

terms of this liberal policy the owner is afforded maximum protection and real satisfaction from his motor car investment.



Hamilton branch for McLaughlin-Buick sales and service is located in this modern showroom and service building.

Since the first carriage branch of the original McLaughlin factory was opened in Saint John, N.B., in 1896 the policy of using the very finest structures for displaying all its products has been maintained



Direct factory branch for handling McLaughlin-Buick sales and service in London is housed in this modern building.



London Zone offices are maintained in the Bell Telephone Building where activities in Zone 5 are administered.

The second branch of the Company was established in Winnipeg in 1899 and this branch, still in operation as a car branch, is the oldest which General Motors has in operation at the present time. The Montreal branch of the McLaughlin Motor Car Company was the next branch to be opened in 1905 followed by another branch of the same company in Toronto in 1909.

Regina and Saskatoon branches were opened in new quarters in 1912, and London and Hamilton branches were started in 1915. Following the organization of General Motors of Canada, Limited, in 1918, no branches

of the company were opened until the Montreal branch of General Motors Products of Canada, Truck Division, was started in 1923. Three years later the Toronto branch of this division started. In 1928 there was considerable activity in the branch organization, with retail truck outlets opened in Windsor and Winnipeg. Cadillac Motor Car Company opened its first retail outlet in Toronto in the same year. In 1929, General Motors Products, Truck Division, opened the Vancouver branch. The second branch of the Cadillac Motor Car Company was started in Montreal in 1930.

These branch units spread from the Atlantic to the Pacific and occupy over half a million feet of floor space. Every building is modern, permitting both splendid showroom facilities and ideal service space. In keeping with the smartness of current models on all car lines, General Motors branches, from exterior ap-



Sales and service activities for McLaughlin-Buick in Winnipeg are housed in this modern and spacious building.



General Motors Truck and Coach, direct factory branch, occupies this showroom and service building in the city of Winnipeg.

pearances always maintain an attractive setting for each display of automobiles.

From the time that the Carriage business was established by the late Robert McLaughlin in Confederation Year, 1867, it has been the policy of the company to house all units of the company, whether manufacturing or retail, in buildings that are a credit, not only to the organization, but to the community in which they are located.



Offices for Zone 4, as well as parts supply depot, are in the building of General Motors Products of Canada in Winnipeg. Parts activities occupy the greater part of this building.

Where it has not been advantageous or permissible for zone offices to be located in branch buildings, space has been leased in the most modern office buildings. This has meant added income to cities in the form of rent and furniture for the zone office administration and personnel. Wherever possible the staffs of zone offices, retail branches and factories have been recruited from the towns in which the units are located.



Direct factory branch for McLaughlin-Buick, sales and service, is maintained in this building in Saskatoon.



Aerial view of the Regina plant of General Motors of Canada, Limited. This modern factory was built to supply the demands of the Prairie Provinces for General Motors cars and trucks.

Where in 1927 General Motors had only one plant in operation, it now has four in the widely separated

proximity to the market in which it is located the Regina plant is able to furnish factory facilities to its dealers, with a resultant saving in time and cost.

The St. Catharines plant of McKinnon Industries Ltd., Division of General Motors, manufactures special parts and accessories that are used on all G.M. cars. This plant was acquired in March, 1929, and has been enlarged considerably, to take care of the increased Canadian content.

Differentials, gears, transmissions, axles, spark plugs and other parts are made in the plant of the McKinnon Industries for assembly to the cars on the assembly lines at Oshawa, Regina and Walkerville. In keeping with the sustained effort of more Empire content, this plant is building new parts and accessories for G.M. cars as the Canadian sources make available more Canadian basic materials. Recently as an example, the making of spark plugs for the trade and General Motors cars was originated under the direction of the AC Spark Plug Company of Canada. These spark plugs are made in the plant of the McKinnon Industries in St. Catharines. In addition this plant produces the unit for the Canadian built Frigidaire refrigerator. And in this department they are able to provide more work for Canadian workmen. If it were possible to group in one mighty panorama all the plants, branches, factory outlets and dealer premises of General Motors of Canada it would present a mighty city of the most modern factories and buildings ever designed. And this city would be named The Motor City, designed and built by General Motors, humming with the honest toil and activity of busy and skilful citizens.



Zone office and parts supply depot for Regina. Administration for all Saskatchewan dealers is maintained in this building, with the assistance of qualified travelling representatives.



Direct factory branch for sales and service of McLaughlin-Buick cars is maintained in this Regina building. This branch started in 1912.

Below is the building in Calgary occupied by General Motors Products of Canada, Limited. The parts depot is maintained here for all cars.



communities of Oshawa, Regina, Walkerville and St. Catharines. The Regina plant, the most modern automobile production unit in the Dominion, is composed of 370,000 square feet of floor space. At peak periods this plant can turn out some 30,000 automobiles in a single year. Through



Vancouver Zone office and parts depot are located in the building shown above. This is the executive headquarters for Zone 1, which includes all of British Columbia.



Direct factory branch for the sales and service of General Motors Trucks and Coaches is located in this Vancouver building. It is the only direct factory branch in B.C.

Let's Go North . . .

IT IS doubtful if anything has done so much to bind the units of Canada together as the motor highways. The provinces are drawn closer by these ribbons of concrete and gravel over which hundreds of thousands of Canadians each year travel to obtain for themselves a better appreciation of the advantages or difficulties of those who live in other widely separated areas of the same Dominion.

In the development of highways the motor car has been the dominating influence, and the motor car must therefore be given credit as a nation-builder.



Motoring through the fruit belt in the Niagara Peninsula has always been an interesting adventure for motorists. A scene on the Niagara-Hamilton stretch.

The roadmaker's task in Canada's far-flung spaces has been enormous, and tens of thousands of men during the past two decades have been engaged in building and maintaining the local and interprovincial highway systems. For this avenue of employment, offering fairly constant work and remuneration for thousands, the motor car must once more be given a mark of merit.

It is only since Canada took to travelling by automobile in earnest that the great highway systems of the Dominion have been developed. First there came a demand for suitable motoring roads in the various provinces, in line with their increasing motorization. Then came the call for



motor trails to the wilderness, and finally the dream of a trans-Canada highway. Opening of the Ontario-Manitoba link of



Motoring in the north requires a few additional bits of equipment, especially in the winter time. At Nipigon.

the trans-Canada highway on July 1st of this year was a notable step towards the realization of this dream.

No automobile, however, has yet crossed Canada by its own power without using flanged wheels on the railroad. It is doubtful if any car will ever accomplish this feat until road gangs shall have first paved the way.

Many of the younger people in this northern country have never seen an automobile except in pictures. When an adventurous driver managed to get his machine through bush trail and over railroad ties as far as the town of Nakina in the fall of 1930, the whole town turned out to welcome him. Incidentally, it was a General Motors car which made this unprecedented journey.



Typical Ontario highway scene on the run from Toronto to North Bay. This is a much travelled route of importance.

♦ ♦ ♦ or East



Eastern Canada's part of what will eventually be the trans-Canada highway is already complete. It is possible at the present moment to drive from Halifax on the Atlantic Coast, through Nova Scotia and New Brunswick, through Quebec and the eastern part of Ontario, as far as the town of Hearst, which is about 800 miles west of Ottawa and the same distance

still be inaccessible to the motor car, but actually the best of roads are to be found through the canyons and around mountain bases, as well as in and about the beautiful national parks at Jasper, Banff, Prince Albert and elsewhere.

The roads in the prairie provinces of Saskatchewan and Manitoba are surprisingly good. It is only upon

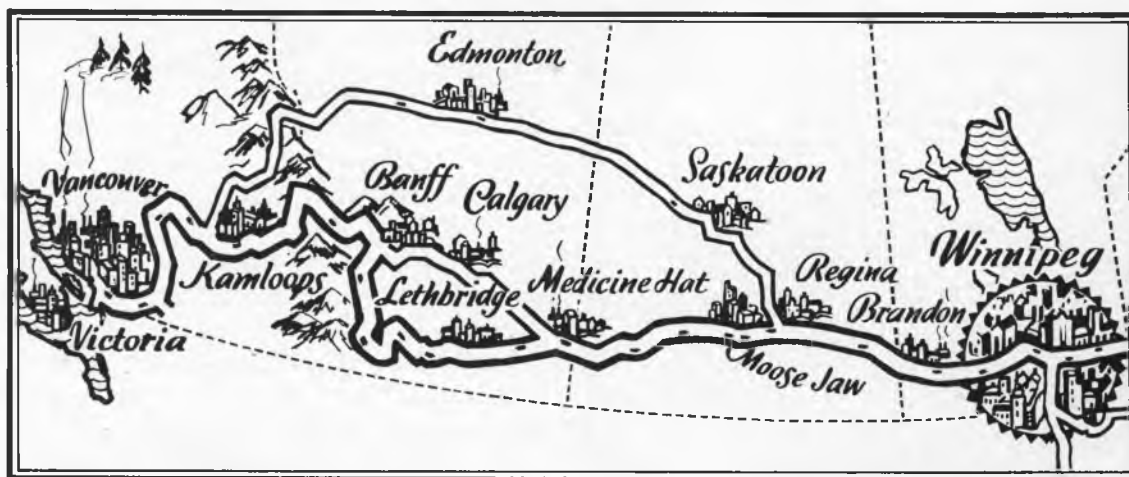


Motor tourists enjoy Maritime scenes like this one at Chester Inlet, N. S.



A fisherman's paradise in New Brunswick, made accessible by highways.

or West ♦ ♦ ♦



northwest of Toronto. The local roads in the Maritime Provinces and Quebec, in addition to the interprovincial highway, are of modern and permanent construction, and have served not only to assist the commercial development of the provinces themselves, but also to attract an influx of tourists that is increasing from year to year.

In Western Canada the development of highways has been rapid. It might be thought that the passes of the mighty Rocky Mountains would

entering northwestern Ontario that the trail ends for the motor car. Difficult as road-building will be in this locality, it is certain that the work will finally be accomplished, though whatever route is chosen will lie over muskeg, rock and bush country. In December of 1931 there were 44,000 men engaged in highway work in all sections of Northern Ontario. Continuance of activities on such a scale will soon see the trans-Canada highway completed, and West and East united in a new transportation epoch.



Drive, if you like, through the passes of the Rockies, no longer a barrier to the motorist who would cross Canada. The road shown here skirts the base of Mount Edith Cavell.

In Truro, Kenora *and* Prince Rupert

• • • In every City and Town of any size in Canada wheels are set turning and people put to work by the operations of the Dominion's largest automobile manufacturer

THE strong, steady pulse of General Motors of Canada is felt in the arteries of trade wherever Canadians live and labor. Meals are bought and lodgings paid for; homes are built and schools supported; merchants everywhere are busier because of the circulation of the divided stream of this motor company's capital. Freights are loaded and water powers are harnessed; the carpenter and the brickmason don their overalls, the clerk and the laborer bring home pay envelopes, because of the almost electrical impulse that car-building by General Motors of Canada radiates to communities hundreds—even thousands—of miles distant.

Picture the effect on any community of the free circulation of one million dollars. You will then be able to grasp the significance of the fact that the expenditures in Canada by General

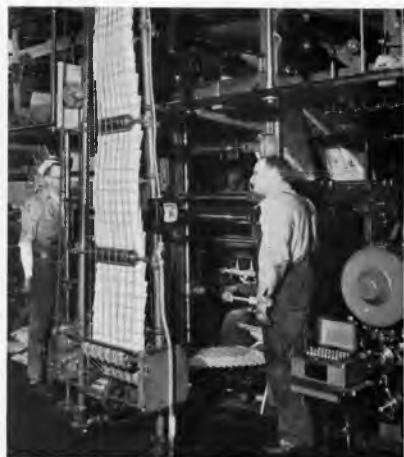


Activity in building trades, as well as in many other channels of employment, is generated by General Motors expenditures.

ture but it represents a phase of Canada's economic well-being that repays further study.

Chief expenditures of General Motors of Canada in the period mentioned show clearly, when they are classified, how widespread are the benefits of the company's activity. To Dominion, provincial and municipal government, the company has contributed very considerable sums. Money paid to the public treasury included taxes on property, excise taxes on products turned out at the plants, Dominion government revenue tax on sales, and duties on certain imported material. There have also been income taxes and the usual licenses required for the operation of company automobiles and trucks.

The direct effect of General Motors operations on other Canadian industries has already been explained,



General Motors announcements help keep daily newspaper presses busy.

Motors of Canada, Limited, during the five years from 1927 to 1931, inclusive, have amounted to \$222,629,965. As is the case in almost every industrial operation, this sum represented enormous activity beneath the surface. Every dollar was handled by dozens of people whether it was originally paid out for wages in the final factory operations, for raw material at the source of supplies, or to transportation workers in between primary industries and the factories. This sum flowed into the hands of merchants, and from them to other merchants. Some of it was paid to truckers or to salesmen. It went on to the grocer, the telephone company, the postman, the telegraph operator and the printer. It is a familiar pic-



The rotogravure sections of weekly papers carry General Motors advertising.

but it must be repeated because of the relatively large proportion of the company's expenditures dispensed in this direction. Purchase of raw materials and materials used in the upkeep of factory plants is sufficient to maintain fairly large sister industries



Besides paying the factory wage bill, the motor car dollar helps provide employment for workers in telephone, telegraph, and radio services. Property taxes paid by General Motors of Canada also aid in the upkeep of public institutions such as schools.

RADIO - TELEPHONE - TELEGRAPH

in various parts of Canada. In addition to the purchase of raw material, the company has also been in the market very heavily for finished material, such as machinery, special tools and office equipment.

To the transportation companies the contribution of General Motors of Canada is an important figure. Not only must iron and steel and various semi-finished parts of the car be brought to the factory, but deliveries of complete automobiles are also made to a large extent by railroad freight. Revenues of the railways are also boosted by the passenger and pullman car fares of a large body of General Motors of Canada personnel necessarily moving about from zone to zone, in the directing of purchasing, sales and service organizations.

Canadian hotels and restaurants also benefit in this direct way from General Motors of Canada, because meals and lodgings have to be purchased for the travelling personnel.

Naturally, one of the largest items of expenditure is to Canadian labor. The thousands of factory workers employed by the company in its plants at Oshawa and other cities receive the wage rates which only skilled craftsmen can command, and the bill is surprisingly large. Then there are the office workers and executives, and, finally, the salesmen to whom the company pays salaries and commission.

Impressive as the wage bill of this large company may be, it falls short of giving a complete picture of the effect on the labor market of the manufacture of cars. It has been esti-

mated that the making of a single automobile in Canada gives employment calling for the services of one competent worker for a period of from three to four months. Naturally, in the spread from raw material to finished product, this employment is not all reflected in General Motors wage bill.

Outside of the fabrication of the car itself, money is paid directly by the company to a variety of skilled workers. For instance, contractors, architects, and men in the building trades are frequently employed in the erection of factories, warehouses and dwellings for General Motors.

Property owners also find the company to be a source of revenue, inasmuch as a large sum is paid in rents.

This by no means exhausts the possible list of direct expenditures. There is one other which deserves special mention. Millions of dollars have been invested in advertising the company's products. Literally forests of pulpwood have been required to carry the imprint of these commercial announcements. Statisticians might estimate the number of barrels of ink or the millions of revolutions of printing presses, large and small, and the resultant employment to printers, pressmen, truck drivers and carriers. It is only one more good example of how the expenditures of General Motors of Canada extend benefits to residents in every city,



town and village of the Dominion.

It is difficult to show in brief space the complete effect on Canadian communities of the expenditures of this large automotive industry; but sufficient has been said to indicate the enormously beneficial results. The general trade of Canada feels the power of the motor car dollar, multiplied, in the case of General Motors



of Canada, Limited, by hundreds of millions in the past five years. To the extent that this industry flourishes, it can be depended upon to send out, in ever widening circles, the healthy impulses that are reflected in the business world of the whole country.

A Back-log For Production

THE fire of twigs crackles merrily and the pot boils; but it is a blaze of short duration and often has to be re-kindled. For a fire that is to put forth warmth and comfort all night long, there must be more substantial fuel. Fortunate, indeed, is he who can supply his hearth with a "back-log" to radiate cheer through the dark hours.

The simile is particularly applicable to an important group of industries in Canada. These are the industries closely associated with the automotive industry, supplying semi-finished or completely finished material or equipment for the automobiles turned out at the motor factories. It would be possible to name an impressive list of industries standing in such a relationship to General Motors of Canada, at least some of which would not have been started, and would not now be able to carry on, without the stability lent to them by the bigger and stronger company. Thus many items are made in Canada that have no apparent connection with the automobile industry — such, for example, as certain types of upholstery fabrics — which would have to be imported were it not for the "back-log" of General Motors' year 'round purchases. In many such cases, production of the smaller firms is based on the volume of their product absorbed by General Motors of Canada, Limited. In fair weather, general business available in all directions is a considerable factor in such a smaller industry's output. But if this fair weather business for any reason should fail, the contracts with



General Motors of Canada are still sufficient to keep the wheels turning and the factory chimneys smoking. The "back-log" idea has worked out more than once in practice.

This point was effectively discussed in a recent article which appeared in the *Burroughs Clearing House* from the pen of James L. Walsh, a Detroit financial executive.

"If," said Mr. Walsh, "I were handling the advertising for a steel company, or a lumber company, or a plate glass company, a considerable portion of whose output is absorbed by the automobile industry, I would not be advertising steel, or nickel, or lumber, or plate glass to-day. I would

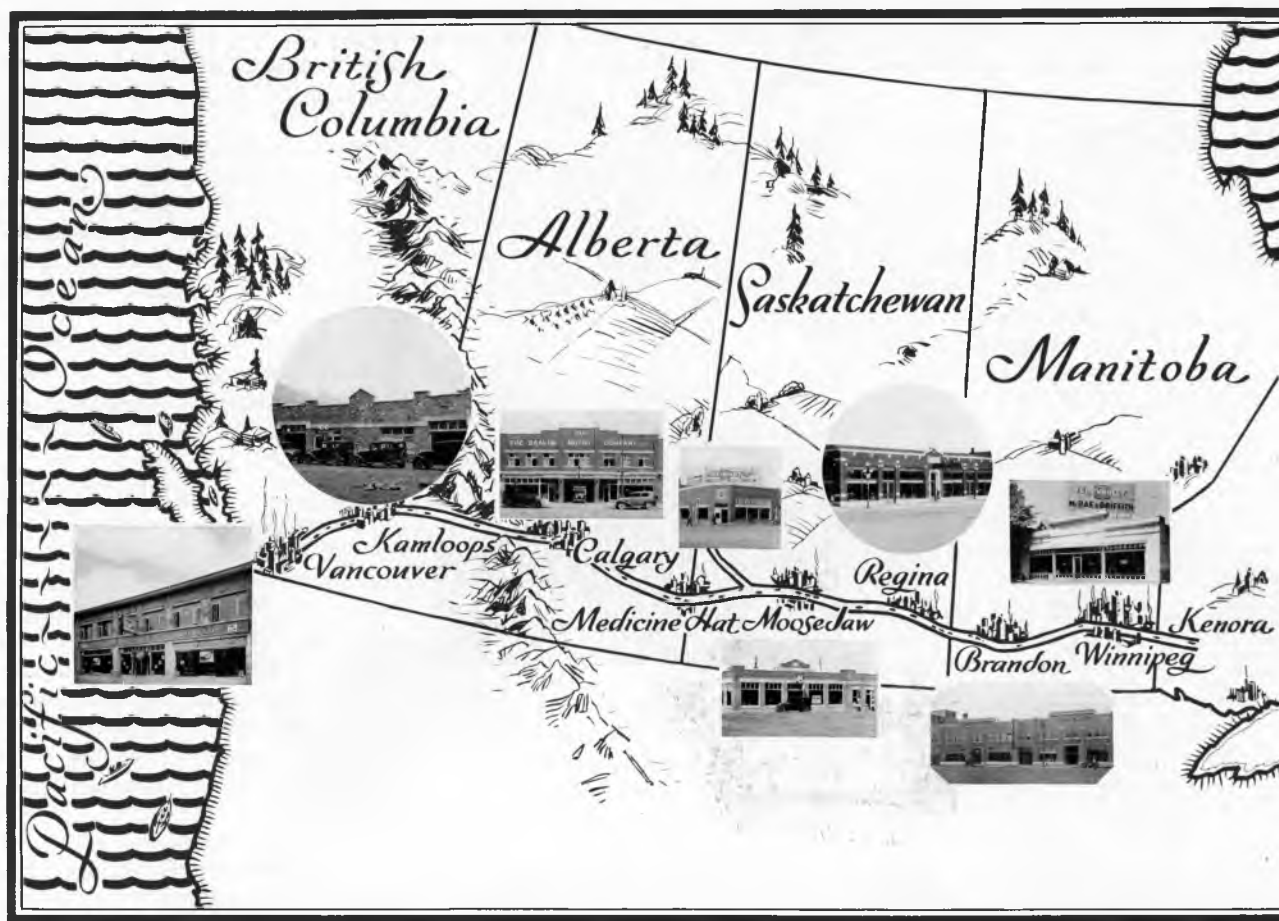
be advertising automobiles, because every automobile that was sold would have part of my product in it. I would try a flank attack on some of my markets rather than the more expensive and less effective frontal attack."

This is a commonly accepted view of the contribution of the automotive industry to other business units, but it stops short of the complete picture, at least insofar as Canada is concerned. The truth is, there are many industrial organizations which would not be in existence at all if it were not for the orders supplied by General Motors of Canada, Limited. The back-log of production consists of the contracts made with that Company, and in many cases the requirements of General Motors of Canada were the factor which influenced the heads of the smaller concerns to start business in the first place.

This is particularly true in the case of companies making parts in Canada which, in the earlier days of the Canadian motor industry, were manufactured only in foreign countries. The policy of General Motors of Canada was to buy Canadian parts where possible, and Canadian companies, or Canadian branches of United States organizations, came into existence as a result of this policy.

More and more made-in-Canada parts have gone into the production of cars at Oshawa as the years rolled by, the current year being marked by the addition of a number of important items to the list. These industrial concerns represent, in aggregate, a very worthwhile part of Canada's trade.





A Thousand General Motors Dealers

THROUGHOUT the length and breadth of Canada there are a thousand dealers of General Motors cars to sell and service the finest personalized transportation ever produced. This network of sales and service units extends from Victoria to Sydney and from as far north as Peace River to the most southernmost dealer near Harrow, Ontario, on Lake Erie. This dealer organization, large as it is, is made up of an army of personnel, divided into sales, service and management. Each group is a specialized unit of its own, improving its efficiency and progress by the contacts with the home office and zone office representatives.

Millions of dollars are invested in the cities and towns in Canada by this dealer organization, and the activity of the General Motors group in any community is the barometer of conditions throughout that section. Each

community feels the effect of G.M. dealerships through taxes and the improvement to property and business methods that each dealer is constantly required to carry out.

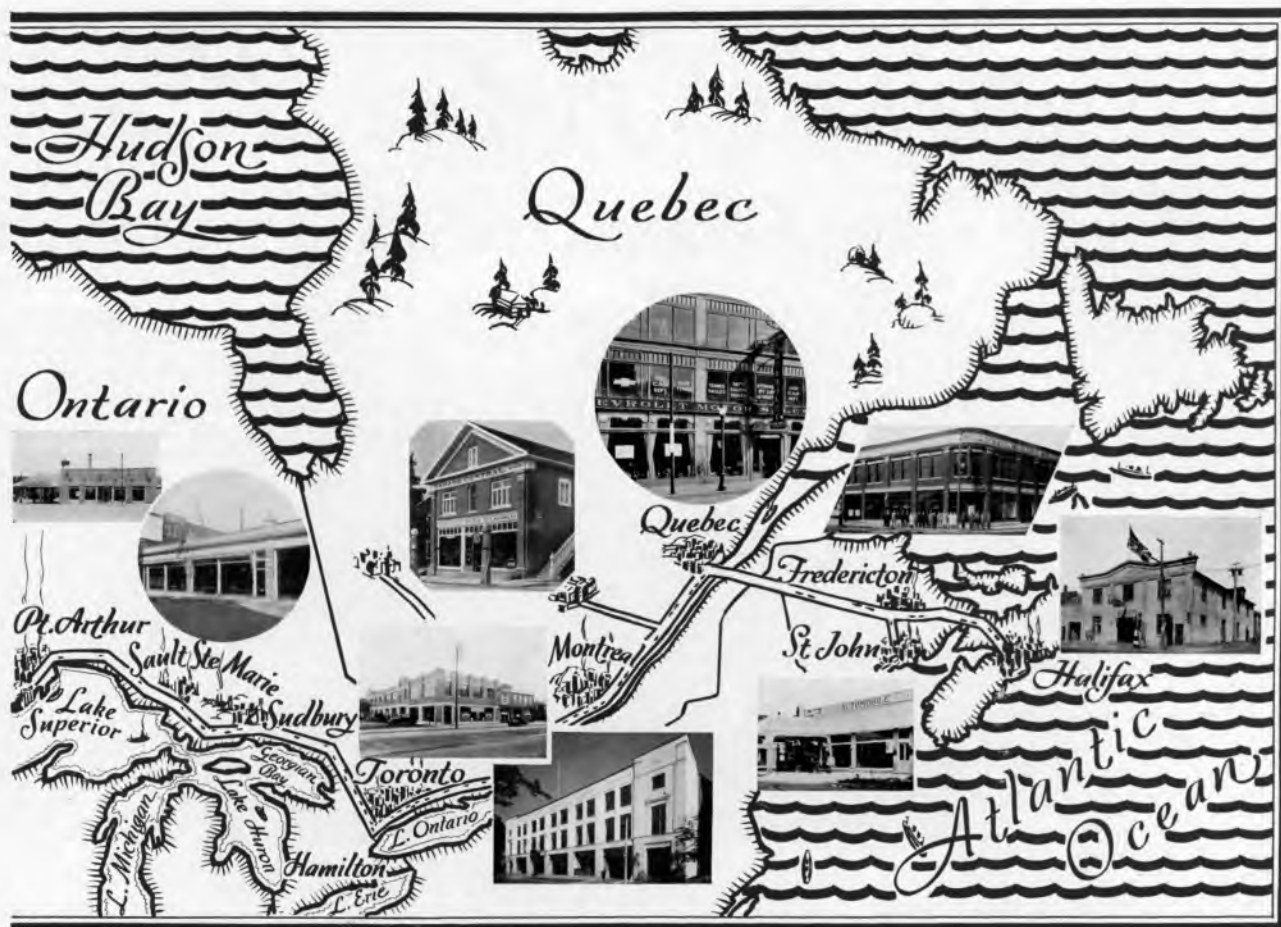
Due to the highly competitive field of retail activity that the automobile dealer is engaged in, it is necessary that he maintain an efficient and well trained staff of service men and salesmen. From this staff of workers, directly maintained by the dealer organization, there are the other secondary groups in each town or city



General Motors co-operates with the dealer in regard to customer service. The interior of a typical maintenance garage is shown.

who feel the impetus of General Motors dealers. These secondary groups are the landlords, grocers, butchers, power and light companies who have as their customers the employees of the dealer organization made up of all G.M. car lines. Other contributing factors on the local community by G.M. dealers are the purchases of mechanical equipment, advertising, hardware, gasoline, oil, and sundry supplies.

Through the zone organization, G.M. dealers are kept in touch with



... with Many Millions Invested

all major plans of the parent management. By means of this zone organization it is possible for each dealer unit to be acquainted with a sales plan or supplied with a part he does not keep in stock. In order to keep this giant organization in a flexible state of activity, there is a field supervision maintained by factory representatives who contact the dealer groups in each territory almost weekly. In addition to the attention given to market and service activities there is also another method of supervision



General Motors Management Service representatives make available to General Motors dealers continued audit of financial and operating methods.

maintained and directed through the zone offices. This activity is known as dealer management service and provides the dealer with perfect supervision of his accounting and auditing departments. Through the experiences of hundreds of other dealers throughout the Dominion he is acquainted with the most efficient and best method of controlling his budget and operations. Through this fine service rendered by the zone office, his activities in each town and city are more efficient and more

profitable and his place in the community made more valuable. "One quality and that the best," originated in the early days of the McLaughlin Carriage Company, is still the motto of the dealer organizations merchandising and servicing all makes of General Motors cars. Through this fine record of progress the dealer groups have increased and won greater favor in the eyes of the car buying public and they have won a deserving place in each community in which they are doing business. In a reciprocating manner, cities and towns point with pride to the dealer institutions of General Motors serving their districts.

In the march of progress into the interior, transportation has always been the greatest need. In providing this necessary and most useful tool for pioneering, General Motors dealers are always available.

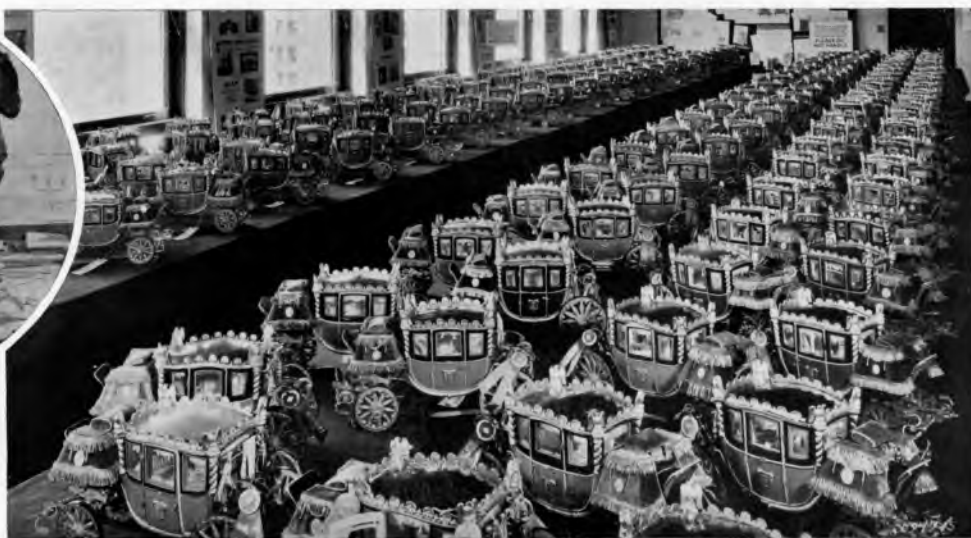


The Fisher Body

An Organization in which



Participants in the coach building contest working on their miniature models in the showroom of a Canadian General Motors dealer during 1932.



Models of Napoleon coaches entered in the 1931 Fisher Body Craftsman's Guild from the various districts competing. During 1932 Canadian made coaches will also compete.

SKILLED handicrafts make the automobile the beautiful and serviceable creation it is today. Not the mass-production machinery of the industrial era, but the work of artist-builders, painstakingly wrought, should be given credit for modern vehicles of transport. For back of every mass operation there is a task for craftsmen—turning out designs, models and original parts, with precision carried to astronomical limits, and fine craftsmanship playing the big part.

The old bugbear that ambled around shedding brown lies about the so-called machine age destroying the need for trained artisans, has of late been completely tamed and muzzled by none other than the craftsmen of tomorrow, the Canadian boy and his American cousin.

For the Fisher Body Craftsman's Guild has been established to stimulate and perpetuate, among the youth of the country, the art of fine craftsmanship which flourished in the middle ages. Fifteen thousand Canadian boys were enrolled in the Guild in its initial year in Canada, compet-

ing for awards totalling \$75,000. Each boy is set the task of building a model Napoleon coach to scale, and the ambition of all these coach-builders is to gain one of four four-year university scholarships, valued at \$5,000 each, which the Guild is offering to the youngsters who submit the best coaches in the international competition. Two boys from each of 56 Guild districts in Canada and the United States are eligible at the end of the annual competition for these university scholarships, which are awarded during the annual Guild Convention in Detroit.

There is no precedent in industry for the work the Guild is doing. Organized in 1930 by the Fisher Body Corporation to stimulate institutional activity, the Guild adopted as its pattern neither the Rhodes Scholarship plan nor the more widely publicized Edison program. It worked out its own ideas of competition in the light of what appeared to its sponsors to be a special need of the modern industrial world—a threatened

shortage of men skilled in the various crafts. Years of valuable experience in the automotive industry convinced R. S. McLaughlin, president of General Motors of Canada, Limited, that the so-called machine age, far from destroying the demand for trained artisans, was really multiplying that need. In fact, there seemed a possibility that industry might some future day find itself cramped for want of skilled men.

The Guild was formed to forestall this threat to industry by stimulating interest in handicraft among boys in their formative years. A really difficult project in craftsmanship was laid out, the construction of the miniature Napoleon coach. The Guild then proceeded to offer awards which would provide real incentive for boys, not only to undertake, but to finish their coach-building job. So successful was the competition in its initial year in the United States that, through the efforts of Mr. McLaughlin, the Guild's activities were extended to Canada, and seven districts

Craftsman's Guild ...

15,000 Canadian Boys are Enrolled



District prize winners at the final judging during the 1931 contest held in Detroit, Mich.

were set up from coast to coast. The same enthusiasm greeted the contest in the Dominion. In the past year actually 15,320 boys enrolled as members, and were supplied with free plans and complete specifications and other information to guide them in their work.

Neither the boy who has started to build a Napoleonic coach, nor the man who has seen it completed will be reluctant to admit that the Napoleonic coach is a much more exacting job than constructing birdhouses, model boats, or even airplanes. The models, derived from two famous coaches of history, one used by Napoleon on the day of his coronation, and the other in which he and Marie Louise rode on their wedding day, are faithful to their originals, even to the smallest details. The boys who win the four scholarships will be those who display the greatest care with details, translating the rather complex blue prints into three-dimensional models of eye-filling grace and beauty.

Hundreds of dealers throughout the General Motors Products of Canada,

Ltd. sales organization are co-operating in the Guild program by sponsoring boys this year, furnishing selected youngsters with bench, tools and materials, and doing all they can to see that the boys finish the job. Similarly, dozens of schools in Canada have recognized the value of the inter-school competitions for special trophies the Guild will distribute in addition to its regular awards.

Leading educationists in Canada are acting as honorary judges in the Guild program, and similar men of academic prominence are backing the Guild in the

and Dean of École Polytechnique, University of Montreal, are acting as honorary judges.

The task of building a model coach embraces four divisions of fine craftsmanship—wood, metal, trim and paint. Special awards are given for excellence in each of these divisions. In fact, the whole \$75,000 total is spread out to cover a wide range of meritorious workmanship. The Guild is divided into two age classifications. Boys from 12 to 15 years of age are listed as juniors, and those from 16 to 19 years of age are listed as seniors. The junior and senior winners from every one of the seven Canadian districts earn, in addition to free trips to Detroit and eligibility for the major scholarships awards, \$100 in cash. The second best coach-builders also receive \$100.

Newspaper support of the Guild in Canada has been exceptionally enthusiastic, and twelve of the leading dailies from Halifax to Vancouver have organized their own chapter of the Guild, and have published each week helpful articles on the catchy phases of construction. These include The Halifax Herald, Quebec Le Soleil, Montreal La Presse, Toronto Telegram, Hamilton Herald, Kitchener Record, London Free Press, Chatham News, Regina Leader-Post, Saskatoon Star-Phoenix, Edmonton Bulletin, and Vancouver Sun.



Master model of a Napoleonic coach that 15,000 Canadian boys are trying to duplicate during the 1932 competition.

United States. The president for the Canadian Section is R. S. McLaughlin. John A. Stiles, chief executive commissioner of the Boy Scouts Association in Canada, is honorary president. Brig-Gen. C. H. Mitchell, Dean of the Faculty of Applied Science and Engineering, University of Toronto, and M. Augustin Frigon, Director General of Technical Education, Province of Quebec,

Group of interested potential craftsmen inspecting master coach at Toronto Technical Institute.



Overseas Assembly Plants Share Labor Content of Export Cars

IN MANY countries in the British Empire there are branch manufacturing plants of General Motors, where the final operations of motor car building and assembly are performed with close benefit to the consumer. General Motors is an international organization, and it has always been its policy to provide as much employment as possible in the countries where sales opportunities are enjoyed. The observer will notice, as a result, the company has now established manufacturing and assembly plants and service and distributing organizations of varying magnitude in India, New Zealand, The Near East, South Africa, or the British Isles.

In those and other countries the patriotic inclinations of motor car users re-act favorably to the automobile that is made as completely as possible in their own countries. When the lack of raw materials in these countries is considered, the most satisfactory motor car in this respect is the one that is finished and assembled in a branch plant in the country where it is to be sold. From the view of the importing British country, two cars placed in the hands of consumers may be equally "British" in total content; but one of them, imported as a completed job, may not be as satisfactory from an economic standpoint as the other, imported in semi-finished state, and put together and finished in a branch factory in the importing country.

Canada is one British Dominion where General Motors cars can be built almost completely "from the ground up," and not merely put together from imported parts. Cars exported from Canada to other countries of the British Empire in a finished state are therefore highly British in content. When automobiles are exported part by part the situation is somewhat different. Naturally each part exported separately is just as "Canadian," or as "British," as if it were shipped in a finished car, but the *percentage* of the British content in exports of unfinished automobiles

*Empire Countries
benefit directly by
policy of General
Motors in maintain-
ing Branch Factories
for final assembly.*

is not as high as the percentage of British content in exports of finished automobiles, where factory or works cost in the country of origin is added before the percentage is calculated.

When an assembly plant is opened by General Motors in a British country to which General Motors of Canada has been exporting automobiles, it has been invariably observed that there is an immediate drop in the total value of exports by this Canadian company. Component parts for the same number of units to be sold in the importing country continue to

be exported, but the figure for material, labor, and overhead in the various costly operations of factory assembly is lost by the exporting country. In view of the beneficial results of a policy which permits assembly and finishing of cars by the importing country, it is argued by economists that requirements of British content in parts and sub-assemblies should not be restrictive.

An unduly high Empire content requirement in cars shipped from Canada either completely assembled or shipped completely knocked down to assembly plants in Empire countries would be a serious hazard for the Canadian automotive industry.

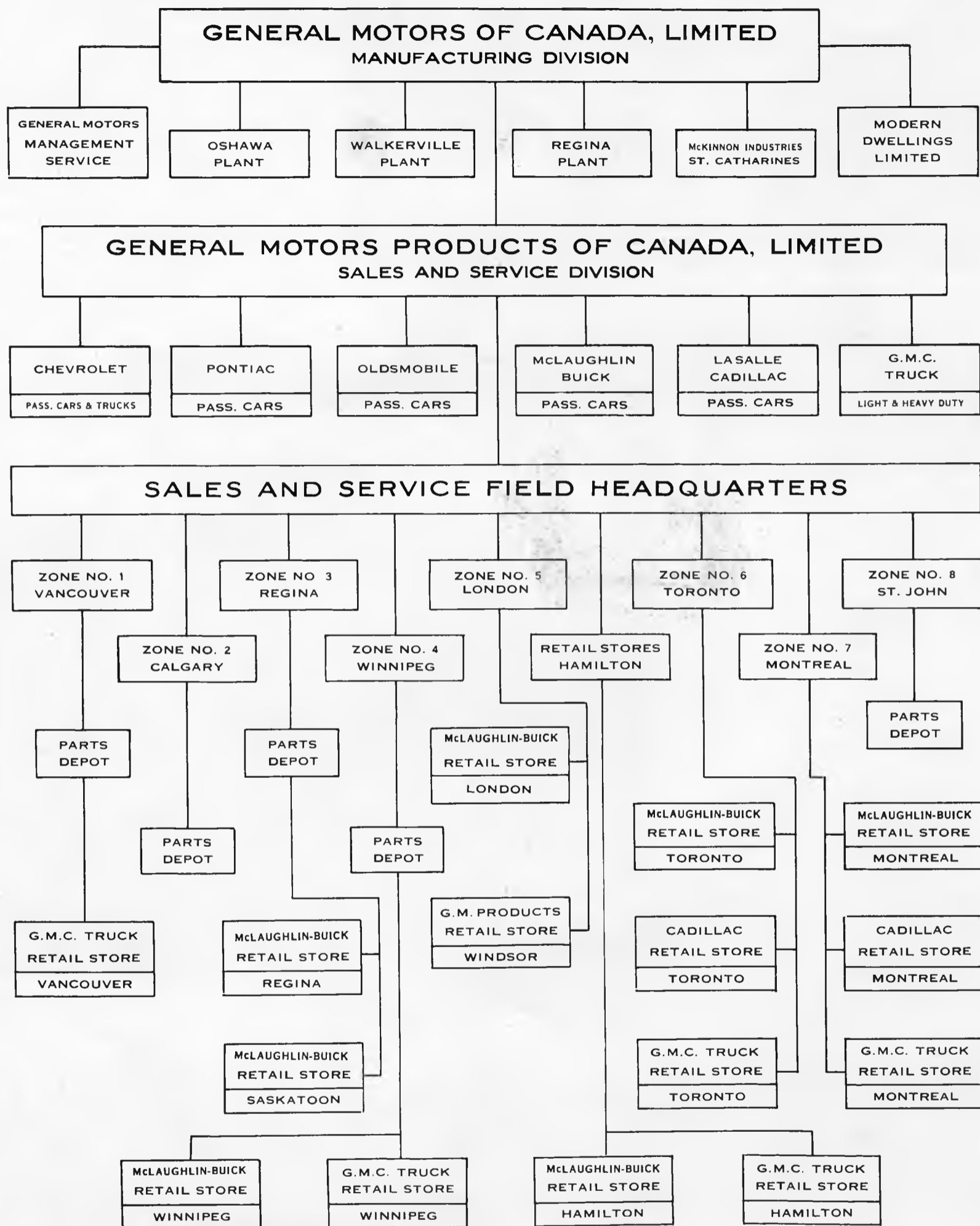
In the case of the assembled car being shipped from Canada, this would be particularly true if certain assemblies which it is not economical to build in Canada were specified in the list. In the case of the cars shipped from Canada in a knocked down condition, a very high content qualification might be a serious hardship.

While a car might easily qualify in a set-up condition, it could be excluded from preference if shipped knocked down, because in shipping a completely knocked down car the Canadian manufacturer loses the ad-



An aerial view of the assembly plant of General Motors in Melbourne, Australia, an example of the extensive industrial activity which results from a policy of providing employment in the country which extends sales opportunities.

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of General Motors of Canada, Limited or the Canadian plants of suppliers.
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